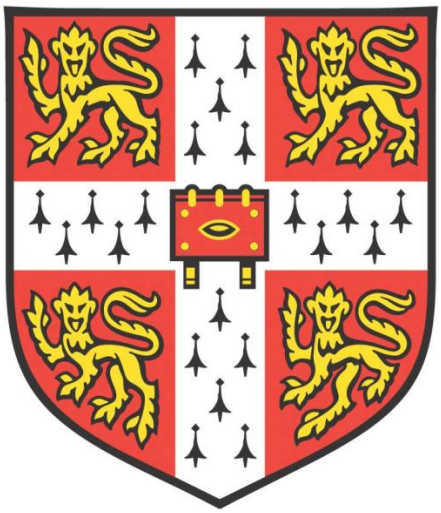
EXAMINING ENGLISH PLANNING AS A BARRIER TO THE THERMAL IMPROVEMENT OF CONSERVATION PROPERTIES



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This dissertation is submitted for the degree of Doctor of Philosophy

September 2015

To my family for their love, support, and belief;

and,

to my friends for keeping me grounded.

DECLARATION

This dissertation is the result of my own work and includes nothing, which is the outcome of work done in collaboration except where specifically indicated in the text. It has not been previously submitted, in part or whole, to any university of institution for any degree, diploma, or other qualification.

In accordance with the Department of Engineering guidelines, when originally submitted for examination, this thesis did not exceed 71,500 words, and contained less than 150 figures.

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ABSTRACT

This dissertation examines why planning is perceived as a barrier to the thermal improvement of conservation properties, and considers ways in which this might be addressed. The focus on thermal improvement is derived from a survey of UK scenario literature for energy management up to 2050. A further examination of the literature finds that conservation properties are particularly in need of thermal improvement; and barriers to thermal improvement are identified. A gap in the academic knowledge is found that identifies planning as a perceived barrier, but that there is no investigation of this widely held perception. The research question is therefore developed as, 'Why is English planning perceived as a barrier to the thermal improvement of conservation properties and how can it be addressed?'

The dissertation methodology uses a pragmatic mixed-methods approach and research design. The first phase of the research examines 'Why planning is perceived as a barrier', by using surveys and interviews to gather evidence of the experiences and opinions of the multiple users of planning for conservation projects. Through this work, a lack of consistency and reliability in English planning is identified. The data suggests this may be due to the discretionary and fragmented nature of the English planning system which requires local authorities to interpret national policies and develop local plans and guidance. This results in local decision-making, which may not be consistent. Additionally, the research finds a perceived lack of strong national policy and guidance. This perceived lack of consistency and reliability in the application of planning is selected as the basis for validation phase of the dissertation research findings.

The validation research seeks to test the perception of a lack of consistency and reliability through a Comparative Information Quality assessment adapted and developed from the discipline of Information Management. Online planning guidance for conservation projects provided by 13 London Councils is compared. The method confirms and highlights areas of inconsistency across the Councils' planning guidance. By identifying a number of areas of inconsistency, and by providing a tool that could help to ensure that policy is delivered consistently at the local level, this component of the research addresses the second part of the research question, 'How can the planning barrier be addressed?'.

In conclusion, the dissertation suggests that planning is perceived as a barrier due to a lack of consistency and reliability in the planning process. Inconsistencies are identified and a recommendation is made for how these might be reduced.

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LIST OF ABBREVIATIONS AND ACRONYMS

BREEAM	Building Research Establishment Environmental Assessment Method
C-IQ	Comparative Information Quality
CA	Conservation Area
CERT	Carbon Emission Reduction Target
CESP	Community Energy Saving Programme
CCC	Committee on Climate Change
CO_2	Carbon dioxide
COP	Conference of Parties
DCLG	Department for Communities and Local Government
DECC	Department of Energy & Climate Change
DTI	Department for Trade and Industry
EEBE	Energy Efficiency in the Built Environment Research Programme
EH	English Heritage
EPC	Energy Performance Certificate
EPSRC	Engineering and Physical Sciences Research Council
EU	European Union
GHG	Greenhouse gas
GLA	Greater London Authority
IHBC	Institute of Historic Building Conservation
IS	Information System
IQ	Information Quality
LDF	Local Development Framework
LPA	Local planning authority
NCM	National Calculation Method
NPPF	National Planning Policy Framework
Ofgem	Office of Gas and Electricity Markets
PD	Permitted Development
PPG	Planning Policy Guidance Note
PPS	Planning Policy Statement
RSS	Regional Spatial Strategy
SAP	Standard Assessment Procedure
SEPN	Sustainable Energy Policy Network
SPAB	Society for the Protection of Ancient Buildings
SPD	Supplementary Planning Document
STBA	Sustainable Traditional Buildings Alliance
UDP	Unitary Development Plan
UK	United Kingdom
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change
VAT	Value Added Tax
WCC	Westminster City Council

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1 INTRODUCTION

The United Kingdom (UK) has set ambitious, legally binding, emission reduction targets to reduce greenhouse gas (GHG) emissions by 80% below 1990 levels by 2050 (Great Britain, 2008a). This target has motivated Government, as well as a number of external organisations, to envision how it will be met. The built environment, specifically buildings and the activities that take place within them, is a significant contributor to UK emissions and energy use. In 2011, buildings accounted for 13.8% of total UK emissions (CCC, 2014) and 32.9% of total UK energy use for heating in the domestic and service sectors (DECC, 2013a). There is widespread agreement that energy conservation in the built environment is a key enabler to meeting the 80% UK emission reduction target (CAT, 2010; Energy Saving Trust, 2008; Foresight, 2008a; IMechE, 2009).

One of the primary energy conservation measures promoted for buildings is the reduction of heating demand through thermal improvements to existing buildings (CBI, 2007; CCC, 2009; Energy Saving Trust, 2008; UKERC, 2013). However, while there is general agreement that existing buildings should be thermally improved reflected by government initiatives, both statutory and voluntary, to promote insulation improvements, the improvement of existing wall insulation has been slower than expected. This has been particularly true for the numbers of solid wall insulation improvements, which are well below what are needed to meet the UK government's carbon budgets (CCC, 2013).

There are a number of barriers that hinder the thermal improvement of existing buildings in different ways, and a diverse range of literature examines them, including from theoretical perspectives (Sanstad & Howarth, 1994; Sorrell et al., 2000; Thollander, Palm, & Rohdin, 2010) and empirical perspectives (Davies & Osmani, 2011; Dowson, Poole, Harrison, & Susman, 2012; Sorrell, 2003). Some common examples of barriers include

cost, lack of information, or technical constraints. For solid wall properties in particular, which tend to be older and may have heritage value, a specific barrier, the need for and subsequent process of planning permission, was frequently mentioned in the empirical barrier literature. A key issue within the planning system is the tension between the obligation to protect heritage assets, and the government objective to improve the thermal performance of the existing building stock (Emmerson, 2008; Iliffe, 2012). Often, the improvement of elements of the thermal envelope may affect the visual appearance of an existing building or may require a change to the actual physical materials within the building. Both of these may be in conflict with conservation policies which are generally concerned with the visual appearance or character of existing buildings and places, as well as the maintenance and preservation of original building materials (English Heritage, 2010).

Issues associated with obtaining planning permission for thermal improvements to conservation properties are mentioned in both academic and industry publications, however, no research was identified that specifically examined them. This results in a barrier that is assumed, but not understood. There are other barriers to the thermal improvement of properties including but not limited to: costs; lack of awareness; technical constraints; architectural consideration; industry barriers; and, consumer confidence amongst others. Unlike planning, many of these have been given more attention in the academic literature. Without understanding how the perceived planning barrier specifically affects projects, it cannot be addressed. Although just one of a number of barriers to thermal efficiency improvements, if the planning barrier is not better understood, it will likely continue to impact the thermal improvement of existing conservation buildings.

English planning was selected as the specific area of the study for this research. In the UK, there are four different planning regimes; in England, Northern Ireland, Scotland, and Wales. Although the basic structures of the four systems are similar, there are differences in the detail and in how each system works (Cave, Rehfisch, Smith, & Winter, 2013). In terms of impact on UK emissions, England covers the largest area and has the highest population of the four countries and consequently contains more buildings. In addition, the access to industry stakeholders provided by the research funding partner Grosvenor, as well as the primary researcher's own network of industry contacts, were based in England.

This dissertation therefore identifies lack of research into the perceived planning barrier as a knowledge gap. The aim of this work is to improve the rate of thermal performance improvements to existing solid-wall properties in England. It does so by specifically

examining some of the reasons that planning is perceived as a barrier, so that they can be addressed.

1.1 Definitions

This dissertation concerns itself specifically with properties affected by conservation policy review during the planning application process in England. This includes listed buildings, buildings within conservation areas, and traditionally constructed buildings as per the definition provided by English Heritage (EH) (English Heritage, 2010). However, it also applies to locally listed buildings and buildings which affect the setting of a listed building or buildings in a conservation area (detail on planning designations can be found in Chapter 4). Although 'heritage properties' is often used to discuss those properties considered to be heritage assets, it was important for the purpose of this dissertation to include all properties which may be subject to conservation review but may not explicitly be heritage assets themselves. Therefore, this dissertation intentionally uses the term 'conservation properties' to refer to all buildings subject to conservation policy review at application stage, regardless of individual heritage status under English planning.

1.2 Target audience

This work is based both in an academic and industry context, and as such, has relevance to a diverse audience. Specifically, this work may be beneficial to:

- Academics and researchers; who are working in the UK built environment energy efficiency arena, or looking for a method to conduct comparative analysis research. This work helps to fill an identified gap in the existing literature and may assist those working towards the thermal improvement of existing buildings in England.
- National and local policy makers; who work in either energy efficiency or conservation arenas. This work illustrates how some national policies and associated guidance are being applied at the local level. The results of this work can help policy-makers ensure that the delivery of policy meets the intended objectives.
- Non-governmental organisations who advise on policy matters; particularly those working in the energy efficiency and conservation arenas. This work illustrates how guidance is being used by different government, and individual stakeholders, and how that guidance may be improved to meet the desired objectives.
- Built environment industry professionals and building owners; particularly for those who desire to improve the thermal performance of a conservation property.

This work provides evidence that there is a basis for the perception of planning as a barrier by applicants, and may assist building owners and their representatives to communicate better with their local authority. This work may also assist built environment stakeholders to lobby national government for specific changes to national policy and guidance.

1.3 Funding

This dissertation was initiated through Industrial Cooperative Award in Science and Technology grant funding for a PhD studentship by international private property company, Grosvenor, and the Engineering and Physical Sciences Research Council (EPSRC). This followed from the Energy Efficiency in the Built Environment (EEBE) research programme between Grosvenor and the University of Cambridge. The studentship topic under which the funding was secured and the dissertation was required to respond to was, 'Appropriate responses by landlords of existing, large-scale mixed use properties under various scenarios for energy management up to 2050'.

1.4 Research design and structure of the dissertation

The dissertation research follows a sequential mixed-methods approach based within the research paradigm of pragmatism. The research was guided by an *abductive* approach which moved back and forth between exploratory work and deductive work, resulting in a sequential series of sub-research questions. An illustration of the research design and structure of the dissertation is presented in Figure 1.1. The research is divided into four parts. Each part is guided by a series of sub-questions, typically generated by the work that preceded it. The specific methods used for investigating the sub-questions are identified where appropriate. Figure 1.1 also identifies where in the structure of the dissertation the work can be found.

Part 1 consists of the developmental stage of the research and provides the foundation for the need for research. It begins by responding to the challenge to identify appropriate responses by landlords of existing, large-scale mixed use properties under various scenarios for energy management up to 2050, as posed and required by the research funding. This leads to the identification of thermal improvement as an appropriate measure and the second investigation; to better understand the current state of thermal improvements. A review of the literature highlights the significance of conservation properties, and the barriers to thermal improvements. Planning is identified as a perceived barrier and additional literature relating to the development and deliver of planning is examined. This work is used to justify the specific research question of the

dissertation, '**Why is planning perceived as a barrier to the thermal improvement of conservation properties and how can it be addressed?**'. The final component of this part of the research is to detail how the subsequent parts of the research are to be undertaken both theoretically and practically.

Part 2 represents the first phase of the primary research, and is used to better understand 'Why is planning perceived as a barrier to the thermal improvement of conservation properties?'. The application of English planning to a thermal improvement project occurs at the local government level. Where planning permission is required, applications are made by building owners, or consultants on their behalf, to the Local Planning Authority (LPA) in which the property is located. In England, each LPA is associated with a local Council which handles many elements of local governance. Each Council has planning officers who assess applications against local and national policy, and making a recommendation for whether projects should be approved or rejected. This system creates two distinct groups of stakeholders who directly interact with the planning application process: those who apply for planning permission, and those who assess applications. To obtain data on the users' perspectives, Part 2 draws from social science techniques including an observational case study, surveys, qualitative open-ended surveys, and qualitative interviews to determine why planning is perceived as a barrier for each stakeholder group. The results of the findings from the planning applicants and assessors are individually presented and assessed, and then compared. A number of reasons why planning may be perceived as a barrier are found. One of these, the highly held perception that there is 'a lack of consistent information, advice, and decision-making between Councils', is selected as the basis for the second phase of the research.

Part 3 presents work done to confirm the findings of Part 2 using a sitemapping analysis of 13 London Council websites. This is first undertaken through a simple comparative diagramming method. The findings of this work, highlight the need for a refined method that could be used to reliably validate results. This leads to the adaptation of an established research method from the discipline of Information Management. The developed *Comparative Information Quality Assessment* uses both qualitative and quantitative insights to compare Council website information for consistency. A detailed and measured comparison is made of the same 13 London Councils, and the results are analysed to understand the impact of the findings on the planning application process. In addition to addressing the research question, this work also illustrates the benefits of the adapted Comparative Information Quality assessment method, which is also examined as a novel research tool for comparative research.

Part 4 draws out the key findings and conclusions presented in each part of the research, answers the research question, and relates the work back to the wider context. In addition, areas for further study identified throughout the dissertation are reviewed, and some of the limitations of the work are discussed.

Figure 1.1: Dissertation research diagram

	PART 1	
Development Phase	What is an appropriate response by landlords? ⇨ *literature review and comparison of UK energy scenarios*	**Chapter 2**
	What is the state of thermal improvements? ⇨ *literature review* What are the barriers to thermal improvements? ⇨ *literature review and comparison of retrofit barriers studies*	**Chapter 3**
	What does the literature say about how planning operates? ⇨ *literature and policy review*	**Chapter 4**
Research Design	**Why is planning perceived as a barrier to the thermal improvement of conservation properties and how can it be addressed?** How will this question be investigated and what is the theoretical positioning behind it and justification for it?	**Chapter 5**
	PART 2	
Research Phase 1	**Why do stakeholders identify planning as a barrier?** How will stakeholders be identified and their perspectives obtained?	**Chapter 6**
	What is the perspective of those who apply for planning permission? ⇨ *case study observation* ⇨ *survey of practitioners and building owners* ⇨ *interviews with practitioners and building owners*	**Chapter 7**
	What is the perspective of those who assess applications? ⇨ *interviews with planning conservation officers* ⇨ *survey of officers who have assessed applications*	**Chapter 8**
	What are the commonalities and differences between the perspectives of those who apply for planning permission and assess applications?	**Chapter 9**
	PART 3	
Research Phase 2	**Is there a lack of consistency in English planning guidance?** How can guidance be compared? ⇨ *sitemapping exercise of 13 London Council websites* How can sitemapping findings be made reliable and validated? ⇨ *development and application of comparative information quality assessment*	**Chapter 10**
	PART 4	
Conclusions	**What are the key findings and conclusions from this work?** What are the limitations of this research? What areas for future work have been identified?	**Chapter 11**

2 UK ENERGY SCENARIOS UP TO 2050

In order to answer the question, 'What is an appropriate response by landlords of existing, large-scale mixed use properties under various scenarios for energy management up to 2050?', this Chapter documents the significant context within which various UK energy scenarios have been developed. It then explores the literature surrounding scenario development, including their strengths and limitations; and, identifies and compares a number of 2050 energy scenarios to assess what measures are proposed for existing buildings in order to meet UK emissions targets. These measures are assessed for their appropriateness to large-scale mixed use landlords. Finally, the thermal improvement of existing buildings is identified as an appropriate response.

2.1 UK energy context

Energy concerns have gradually moved over the last decades to the very top of political agendas due to the significant potential impacts of climate change, peak oil, and energy security (Oberthür & Roche Kelly, 2008; REN21, 2010). The UK energy context has been both influenced and shaped internationally, sub-regionally, and nationally. Key policies which have helped direct UK energy interests are identified in the three sections below.

2.1.1 International context

Internationally, the UK participates annually in United Nations Framework Convention on Climate Change (UNFCCC) Conference of Parties (COP). This has included the UK signing on to: the COP3 *Kyoto Protocol* as an Annex I Party in 1998 and ratifying it in 2002 which set binding obligations to reduce emissions of greenhouse gases (GHG); and the 2009

COP15 *Copenhagen Accord* which set emissions reduction targets for 2020 (UNFCCC, 2010).

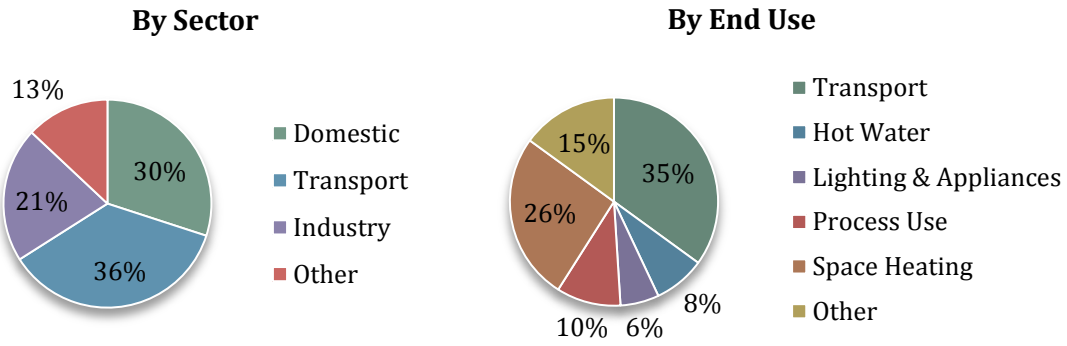
2.1.2 Sub-Regional context

Sub-regionally, as a member state, the UK is subject to European Union (EU) policies. In 2000, the European Commission responded to their Kyoto obligations by launching the European Climate Change Programme whose goal was to identify and develop all the necessary elements of an EU strategy to implement the protocol (European Union, 2012). Focusing specifically on reducing energy consumption in the built environment, the *Energy Performance of Buildings Directive* was passed in 2002 (European Parliament and Council, 2002). In 2006 the EU issued the green paper *A European Strategy for Sustainable, Competitive and Secure Energy* which set forth challenges regarding energy security issues, infrastructure improvements, growing energy demand, and GHG emissions amongst others (European Commission, 2006). This prompted the development of a number of strategies in 2007, including 2020 climate and energy targets. These targets, known as the '20-20-20' targets were enacted through a climate and energy package of four complementary pieces of legislation in 2009. This included the introduction of governance of emissions not previously covered by policy including transport, housing, agriculture, and waste; as well as setting national targets for renewable energy (European Union, 2012). The EU has also been working towards a flagship initiative, *A Resource-Efficient Europe,* as part of the Europe 2020 strategy. Part of the initiative includes an EU 2050 energy scenario called *The Roadmap* which suggests by 2050, the EU should cut its emissions to 80% below 1990 levels through domestic reductions alone (European Commission, 2011).

2.1.3 National context

UK national policy has developed closely alongside these international and sub-regional contexts. In 2003, the Department for Trade and Industry (DTI) published an Energy White Paper, *Our Energy Future – Creating a Low Carbon Economy* which set out a long-term strategic vision for energy policy combining environmental, energy security, competitiveness, and social goals. It set the goal of a 60% reduction of GHG emissions from 1990 levels by 2050. The 2003 White Paper identified sectors of energy consumption and end-use consumption (see Figure 2.1). With respect to the built environment, the companion text to the 2003 White Paper identified home heating as one of the specific areas for improvement. Grant schemes to improve homes through better insulation, more efficient heating systems, and minimisation of draughts were expected to be used to improve home energy use (DTI, 2003).

Figure 2.1 : Final UK Energy Consumption in 2002 (DTI, 2003)



The implementation and delivery of the 2003 White Paper was taken forward via the Sustainable Energy Policy Network (SEPN), a network of policy units from across government departments, the devolved administrations, regulators, and key delivery organisations. SEPN brought forward the *Sustainable Energy Act 2003* which provided for the development and promotion of a sustainable energy policy and to amend the *Utilities Act 2000* (Great Britain, 2003). This was followed by the *Energy Act 2004* which implemented a range of commitments made in the 2003 White Paper including providing powers in relation to nuclear, renewable, and offshore energy production (Great Britain, 2004a).

In 2005, there was a review of the country's progress on achieving the goals set out in these Acts (DECC, 2013c). This review led to the 2006 report *The Energy Challenge* which called for a package of proposals to help address the long-term challenges for UK energy policy. The report also acknowledged the influence of the EU Emissions Trading Scheme as well as the need for post 2012 international policy targets after Kyoto (DTI, 2006).

A series of consultations were held throughout 2006-7 about items raised in *The Energy Challenge* and formed the basis for the 2007 *Meeting the Energy Challenge: A White Paper on Energy* which also marked the conclusion of SEPN activity (National Archives, 2009). The 2007 White Paper set out UK international and domestic energy strategies as previously articulated in the 2006 Energy Challenge Report and went on to detail how the UK intended to implement the measures set out in the report and those announced in the interim of the report and the white paper publication (DTI, 2007).

The Department of Energy and Climate Change (DECC) was created in October 2008 to consolidate a single government location for energy policy and tackling global climate change on the behalf of the UK. Upon their inception, DECC took two Bills through Parliament building on the 2007 White Paper: the *Climate Change Act 2008;* and, the *Energy Act 2008*. Along with the *Planning Act 2008*, these three Acts together comprised

the Government's strategy to 'secure long-term prosperity and quality of life' (National Archives, 2009).

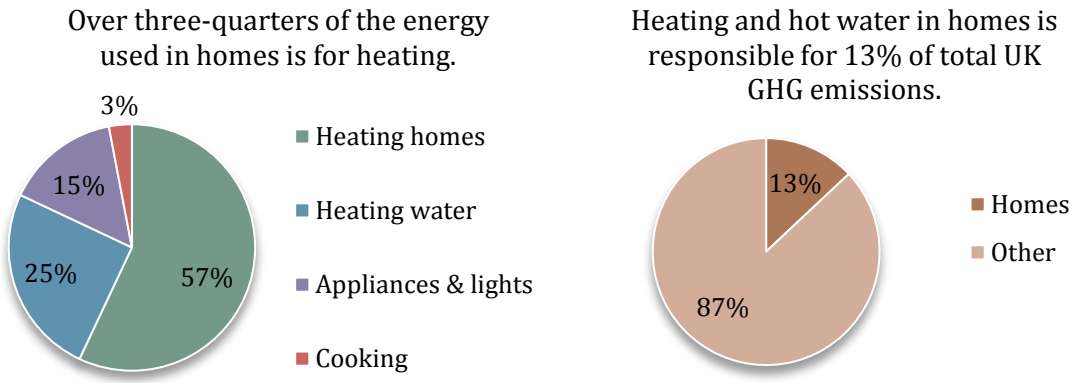
The *Climate Change Act 2008* set out a process for managing and responding to climate change by setting binding targets, taking powers to meet those targets, strengthening the institutional framework, and establishing clear and regular accountability to the UK Parliament and to the devolved legislatures. Two key aims of the Act were to: improve carbon management and help the transition towards a low carbon economy in the UK; and to demonstrate UK leadership internationally including taking responsibility for reducing global emissions in the context of global discussions at the annual UNFCCC COP. A key provision of the Act was to set a legally binding target of at least an 80% cut in GHG emissions below 1990 levels by 2050 and of at least 34% by 2020 (Great Britain, 2008a). With this Act, the UK became the first country in the world to set legally binding carbon budgets (DECC, 2013c).

The *Energy Act 2008* set out implementation measures for the legislative aspects of the 2007 Energy White Paper. This included updated energy legislation to reflect the availability of new technologies and emerging renewable technologies, changes to correspond with the new requirements for secure energy supply, and protection of the environment and the tax payer as the energy market changes (Great Britain, 2008b).

The *Planning Act 2008* was intended to speed up the process for approving major infrastructure projects. One of its key aims was to create a new body, the Infrastructure Planning Commission, which would make decisions based on new national policy statements that would be used for major energy projects. Other key aims included the development of a new Community Infrastructure Levy on developments that would finance infrastructure, and that planning appeals in relation to minor developments would be heard by a panel of local councillors and not by a planning inspector (Great Britain, 2008c).

Since 2008, the policy context has continued to define and refine the targets and objectives as set out in these three Acts. In 2009 DECC published *The UK Low Carbon Transition Plan* which focused specifically on the actions needed to meet the 2020 34% reduction target. This included a focus on increasing production of low carbon electricity as well as reducing energy use in homes and communities mainly through reducing heating demands as supported by Figure 2.2. These proposed reductions accounted for a 29% cut in emissions from homes which amounted to 13% of the total emissions savings of the plan (DECC, 2009).

Figure 2.2 : Low Carbon Transition Plan focus on Heating (DECC, 2009)



The *Energy Act 2011* was specifically designed to improve the provision of energy efficiency measures to homes and businesses, as well as to improve national energy security and encourage low carbon generation. The flagship policy included in the act was the 'Green Deal', a scheme to provide upfront financing for building energy efficiency improvements which would be paid for by energy bill savings (Great Britain, 2011a).

It is under this context of increased political focus on energy, both internationally and nationally, and of ambitious 2050 GHG emission reduction targets that a number of UK energy scenarios were developed. The scenarios, developed by both government and independent agencies aimed to show how the UK could achieve these ambitious targets.

2.2 Scenarios literature

Developing and directing specific policy across various national interests requires both evaluating and planning for the long-term future. Future studies are a 'multi-disciplinary field… concerned with a wide range of views about possible, probable, and preferable futures' (Assakul, 2003). Scenarios are a type of futures study which can be used to provide descriptions of possible future states and developments. Their purpose is not to identify the most likely future, but to understand future uncertainty and to acknowledge the forces that impact it. In doing so, they allow decision makers to weigh choices more carefully and with better understanding of possible and diverse impacts when making both short and long-term strategic decisions. Scenarios are therefore used to inform decision making by ordering and framing organisational thinking about the long-term while providing tools and confidence to take action in the present. Scenarios can help to provide 'strength of purpose and strategic direction in the face of what is often daunting, chaotic, and even frightening circumstances' (GBN, 2013).

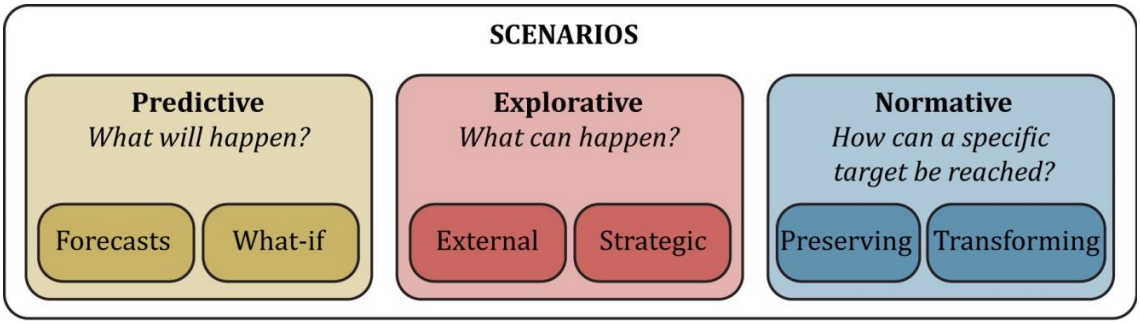
Börjeson, et al. state that while there is no consensus on scenario typologies, they tend to reflect the three future views by being concerned with 'What will happen?, What can

happen? and How can a specific target be reached?'. Their paper links these three questions to three categories of scenario, each with two different scenario types as shown in Figure 2.3 (Börjeson, Höjer, Dreborg, Ekvall, & Finnveden, 2006).

Predictive scenarios are mostly used to plan for and adapt to situations that are likely to occur, particularly in the shorter term. Forecasting is an attempt to predict the most probable future by extrapolating from current or historical conditions (Lindgren & Bandhold, 2009), while what-if scenarios investigate what will happen on the condition of some specified near-future event, and consist of a group of forecasts (Börjeson et al., 2006). Predictive scenarios can be reliable under relatively stable and short term conditions and potentially very useful as an aid to planning and decision-making (Wilkinson, 2009). However, a critique of forecasting is that taking actions to address an expected future may inadvertently deliver that future where it would otherwise not have necessarily occurred (Höjer & Mattsson, 2000). Additionally, in the longer term, fundamental uncertainties due to complexity, turbulence, unforeseen events, and/or ambiguity can cause forecasts to be 'problematic' (Lindgren & Bandhold, 2009).

Explorative scenarios focus on the uncertainty surrounding '*What can happen?*'. The aim is to explore plausible future outcomes from a variety of perspectives. Börjeson, et al. distinguish between external scenarios which look at factors external to the scenario developer while strategic scenarios look at the potential consequences of the actions of the scenario developer (Börjeson et al., 2006). Wilkinson notes the significance of the emphasis on 'plausibility' in explorative scenarios in contrast to the predictive scenario emphasis on 'probability' (Wilkinson, 2009). Explorative scenarios are particularly valuable when a new challenge emerges that is not well understood and are intended to form a basis for strategic conversation (Shell, 2008). Typically explorative scenarios are developed and presented in a set which represents a wide scope of possible developments (Börjeson et al., 2006). They are used from the perspective that the future is unpredictable, since it contains 'irreducible uncertainty', but can be a tool to assist people to take a long view within a world of great uncertainty (Schwartz, 1998). Explorative

Figure 2.3 : Scenario typology (Börjeson et al., 2006)



scenarios are designed to challenge assumptions, which paradoxically, often come from having expertise and experience. This means it is important to build the scenarios with a diverse group of stakeholders involved with, or affected by, the challenge. Because assumptions can change, explorative scenarios are most useful if they are used regularly over a period of time and embedded into the strategy of the organisation creating them in order to continue to challenge those assumptions, and to test plans and strategies. However, they can still promote discussion and raised awareness as single exercises (Shell, 2008).

Normative scenarios 'represent organised attempts at evaluating the feasibility and consequences of trying to achieve certain desired outcomes or avoid the risks of undesirable ones' (Swart, Raskin, & Robinson, 2004). Börjeson, et al. distinguish two key contextual differences in normative scenarios. Preserving scenarios aim to find out how a target can be met more optimally by adjusting the current situation. Transforming scenarios aim to find out how a target can be reached when the current situation is not expected to deliver it (Börjeson et al., 2006). Backcasting, the method used in transforming scenario development, emphasises the need for alternative solutions when forecasts indicate that set targets will not be attained (Höjer & Mattsson, 2000). These scenarios tend to have rather long time perspectives of 25-50 years, as enough time needs to be provided for 'new paths along which development can take place' (Börjeson et al., 2006). A challenge of normative scenarios is that they are made with assumptions about future behaviours and worldviews that shape how the story is told and what lessons are drawn, although this can be addressed through transparency and rigor (Swart et al., 2004). Additionally, they may promote expensive short term investments to reach the longer term target, while new options or even the target itself, can change before the target year is reached (Börjeson et al., 2006).

While no one can predict what will happen, futures research can help to identify potential risks and opportunities (Foresight, 2008b). Scenarios provide a method for considering the potential implications of, and possible responses to, different events. They provide a shared language and concepts as a basis for exploring future uncertainties and making more successful decisions (Shell, 2008). By identifying and examining current factors and trends, and how they might play out in the future, futures work can assist policy-makers and organisations to consider today's challenges from a different perspective and also allow them to test responses in order to minimise costs or maximise benefits. Scenarios are well suited to the exploration of energy management because of the need for a long-term perspective and the complexity of the systems under consideration (Foresight, 2008a).

2.3 Comparing a selection of UK energy scenarios

This section seeks to compare a selection of UK energy scenarios with respect to what initiatives are proposed in each, specifically regarding the existing built environment. This dissertation does not attempt to assess the validity of any of the scenarios examined as that is beyond the scope of this research.

The UK energy scenarios illustrated in Table 2.1 were taken from a literature search on energy scenarios and from two studies which reviewed future literature relevant to energy management (ERP, 2010; Parkinson, Friedman, Hacking, Cooke, & Guthrie, 2012). Table 2.1 provides notes against each scenario summarising the initiatives proposed for the existing built environment. In some cases, more than one scenario was developed and presented in the reports. In these instances, they are identified in the notes, although only scenarios which met the UK 2050 emission targets have been included.

Across all the scenarios they assessed, the ERP found agreement that energy conservation was a key enabler in meeting the 80% UK emission reduction target (ERP, 2010). This was confirmed by a review of the scenarios listed in Table 2.1, some of which were reviewed by ERP and some of which were published after their review (CfSD, 2012b; DECC, 2010; National Grid, 2012; UKERC, 2013), showing that energy conservation and demand reduction continued to be a strong component of UK energy scenarios. In their review, ERP found that energy demand from end users must stabilise and preferably reduce, with the majority of scenarios assessed suggesting a reduction of between 30-50% of 2010 levels (ERP, 2010). This finding was confirmed by a review of the scenarios which showed a common focus on the reduction of energy use in the built environment with significant percentages attributed to energy use and GHG emissions shown in Table 2.2. Although not all of the scenarios examined provided sectorial break-downs of energy use or GHG emissions, the built environment was mentioned in each one reviewed.

Building on the common call for energy demand reduction, the reviewed scenarios showed a strong focus on the reduction of heating demand as a primary contributor to energy use and GHG emissions. Particularly from residential buildings but also from 'buildings' in general. The Centre for Alternative Technology scenario suggested that buildings are a key element to meeting UK energy targets as they can technically achieve greater reductions than other industries and may need to compensate for those industries that not meet the 80% reduction target (CAT, 2010). Most of the scenarios used DECC data on UK sectorial energy use to support their baseline position, the most recent of which for 2012, is shown in Figure 2.4.

Table 2.1 : Selected UK energy scenarios

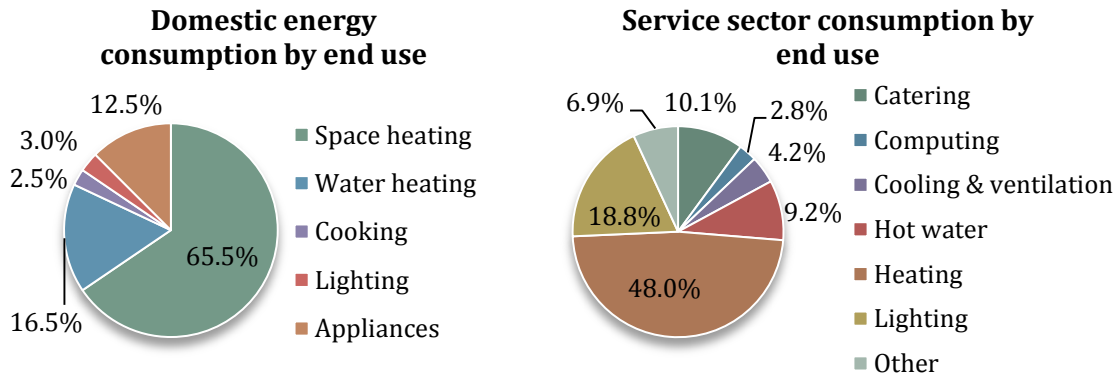
Year	*Organisation*	*Title*	*Scenario Type*
2010	*Centre for Alternative Technology*	*Zero Carbon Britain (CAT, 2010)*	*Transforming*
	• *Constructed around a 90% reduction by 2030.* • *'Existing buildings must decrease their energy demand by over 50% with domestic heating being 70%.'* • *'The most effective method of lowering carbon emissions is improving the performance of the existing building stock.'* • *Four key ways to decrease space heating demand: Improve the insulation or 'fabric' of buildings; decrease draughts, decrease heat demand; and decrease air temperature.*		
2007	*Confederation of British Industry*	*Climate Change: Everyone's business (CBI, 2007)*	*What-if*
	• *Various forecasts to 2030 to make recommendations to be on track for 2050.* • *31% emission reduction in buildings needed.* • *The rate of insulating existing housing needs to triple over the next 20 years.* • *Wall and loft insulation and better heating controls in existing homes.*		
2009	*Committee on Climate Change*	*Meeting Carbon Budgets – the need for a step change (CCC, 2009)*	*Forecast and Transforming*
	• *Two target achieving scenarios: 'Extended Ambition' and 'Stretch Ambition'* • *Residential energy demand falls 16% by 2020 with total emissions falling by 29%.* • *Insulation of 90% of lofts and cavity walls by 2015 and 2m solid wall houses by 2020.*		
2010	*DECC*	*2050 Pathways Analysis (DECC, 2010)*	*Transforming*
	• *6 illustrative pathways to show how targets can be reached based on 2007 data.* • *Pathways Alpha, Beta, Gamma, Epsilon: existing homes and buildings are better insulated with 25% solid wall by 2022, 50% cavity wall by 2022, 45% floor insulation by 2050, 35% triple glazing equivalent by 2050, 30% loft insulation by 2022, and 25% improved air tightness by 2020.* • *Pathway Delta: average home temperature decreases by .5 °C and comprehensive thermal improvements including 70% solid wall insulation by 2040, 75% cavity wall insulation by 2016, 60% floor insulation by 2050, 60% triple glazing equivalent by 2050, 80% loft insulation by 2040, and 50% improved air tightness by 2020.* • *Pathway Zeta: 5% solid wall insulation by 2011, 25% cavity wall insulation by 2050, 30% floor insulation by 2050, 10% triple glazing equivalent by 2022, and 5% loft insulation by 2022*		
2012	*Energy Efficiency in the Built Environment Research Programme*	*Scenarios for the Future of Energy Management in Buildings and Property Developments (CfSD, 2012b)*	*External*
	• *One of the four exploratory scenarios meets the target: 'Transformational Change'* • *'Older buildings are retrofitted with the most advanced technology to ensure maximum energy efficiency.'*		
2008	*Energy Saving Trust*	*Emission Impossible? (Energy Saving Trust, 2008)*	*Transforming*
	• *By 2020 a carbon savings of 20% from improving the energy performance of all existing homes.* • *'By 2050 all homes are 'zero carbon' no matter when they were built through a combination of insulation and micro-generation.'*		
2008	*Foresight*	*Sustainable Energy Management and the Built Environment (Foresight, 2008a)*	*What-if and Transforming*

	• *Four pathways to decarbonisation: 'Resourceful Regions', 'Sunshine State', 'Green Growth', and 'Carbon Creativity'* • *Three include deep energy upgrades of the existing building stock, while 'Green Growth' places emphasis on efficient new buildings minimising the need for and value of older stock.*		
2009	*Institution of Mechanical Engineers (IMechE)*	*UK 2050 Energy Plan: Making our commitment a reality (IMechE, 2009)*	*Transforming*
	• *Scenario for a 90% reduction of UK GHG emissions by 2050* • *50% reduction in building energy use through reducing space heating demand by improved thermal insulation, improved heating systems, and better electrical lighting and appliances.*		
2012	*National Grid*	*UK Future Energy Scenarios (National Grid, 2012)*	*What-if*
	• *Three scenario options with planning to 2030 to reach 2050 targets.* • *The insulation market is beginning to saturate, remaining homes are reluctant or hard to treat.* • *'Slow Progression': reduction in rate of energy efficiency take up as householders are reluctant.* • *'Gone Green': reduction in rate of take up of energy efficiency measures due to greater prevalence of harder to treat and reluctant households.* • *'Accelerated Growth': insulation rates remain steady with solid wall increasing considerably.*		
2013	*UK Energy Research Council*	*The UK Energy System in 2050: Comparing Low-Carbon, Resilient Scenarios (UKERC, 2013)*	*Transforming*
	• *Compares and contrasts four scenarios using MARKAL model.* • *Residential energy use in 2050 is less than 50% of 2000 levels.* • *To succeed, a 'fundamental transformation of building stock in terms of its energy efficiency' is required, although there are no signs this is currently underway.*		
2007	*WWF-UK, IPPR, and The RSPB*	*80% Challenge: Delivering a low-carbon UK (WWF-UK, IPPR, & The RSPB, 2007)*	*Transforming*
	• *An aggressive focus on energy efficiency across all sectors of the economy.* • *The household sector decarbonises substantially with zero-carbon electricity replacing natural gas.*		

Table 2.2 : Built environment energy use and GHG emissions scenario comparison

Source	***Year***	***% UK Energy Use***	***% UK GHG Emissions***
Centre for Alternative Technology (CAT, 2010)	2009	28% Residential	44% Buildings (17% non-domestic, 27% domestic)
Confederation of British Industry (CBI, 2007)	Not stated		17% Buildings
Energy Saving Trust (Energy Saving Trust, 2008)	2008		43% Personal Use (homes and travel)
Institution of Mechanical Engineers (IMechE, 2009)	2006	26% Residential	17.3% Residential
Foresight (Foresight, 2008a)	2008	50% activity in the built environment	

Figure 2.4 : Domestic and service sector UK energy consumption (DECC, 2013a)



ERP asserted that most scenarios assumed an almost complete uptake of insulation by 2020 (ERP, 2010). The scenario review for this research found more diversity in proposed insulation levels. Although they tended to be ambitious, complete uptake of insulation was not promoted by all scenarios. In particular, solid wall insulation was identified as a challenge that may not be met entirely in more than one scenario (DECC, 2010; National Grid, 2012). ERP noted that the challenge associated with insulation was not one of technology, as conventional methods of insulation were well understood, but rather it was a matter for policy makers. They stated that there seemed to be little research into technologically advanced insulation that could overcome the problems associated with retrofit, mainly being too thick, or too unsightly as well as advances in solid wall insulation and recommended that this research be undertaken (ERP, 2010).

In addition to insulation, other measures and technologies were identified in the reviewed scenarios reviewed to address energy demand reduction in buildings. These included the use of smart meters (CBI, 2007; CCC, 2009; Energy Saving Trust, 2008; IMechE, 2009; National Grid, 2012), lowering the internal temperatures of buildings and rooms (CAT, 2010; CCC, 2009; DECC, 2010), and changing from predominantly gas heating to low or zero carbon electric heating technologies (CCC, 2009; DECC, 2010; Energy Saving Trust, 2008; IMechE, 2009; National Grid, 2012; UKERC, 2013).

2.3.1 Appropriate responses by landlords to UK energy scenarios

It is clear from a review of UK energy scenarios that the built environment is a significant energy user and contributor to GHG emissions. In order to reach the UK's 2050 GHG emission reduction targets, the scenarios agree that a reduction of energy demand in the existing built environment is critical. Large-scale landlords have the potential to affect a significant amount of properties through their initiatives and so this research chose to focus on the physical interventions that landlords could undertake in their properties to address the future energy challenge.

The improvement of the thermal envelope of existing buildings as a way to reduce heating demand was highlighted in each scenario reviewed. DECC noted in their report that the rate of heat delivery is dependent on the rate of heat loss, meaning that insulation and air-tightness will have a great effect on heating levels required, regardless of heating technology (DECC, 2010). Some scenarios noted that uptake of insulation was where the greatest potential energy demand improvements could be made (CCC, 2009; National Grid, 2012). The Committee on Climate Change also noted the benefits of, and promoted, a 'neighbourhood approach' to building fabric improvements (CCC, 2009). Large-scale landlords are often in a good position to undertake such improvements as they may own groups of buildings together. Therefore, due to the high expected benefit and general agreement amongst the scenarios reviewed, the improvement of the thermal performance of existing buildings was selected as an appropriate response by landlords and for the focus of this research.

The benefits from smart meters comes from the tenant interaction with the smart meter to better understand, and subsequently reduce their energy use. The UK is currently planning a mass roll-out of smart meter technology and has proposals in place to replace over 53 million gas and electricity meters by 2020 so that all homes and small businesses have them (GOV.UK, 2013d). As the Government is requiring energy companies to install the meters for their customers, smart meters were not selected as an appropriate response by landlords for this investigation

The literature suggests that improved building controls, reducing internal building temperatures, or heating only occupied rooms can have a significant effect on energy demand reduction (Carbon Trust, 2007). However, internal temperatures are typically controlled by building tenants. While this area is worthy of further research, this dissertation chose to focus on a landlord response which would have a positive benefit whilst not being dependent on occupant behaviours.

Heating systems have a certain useable life and are replaced regularly, when existing units fail (National Grid, 2012). Electric heating is currently more expensive and therefore less attractive to tenants. Additionally, there have also been debates about changing over to electric heating before the electricity supply has been decarbonised; arguing that premature switching could lead to higher GHG emissions due to the higher emission profile of electricity compared to gas (Fawcett, 2011). Heating system technology was therefore not chosen as appropriate at this time, as until the future of the electricity supply is better known it may not be appropriate, and if electric heating does become more popular and cost competitive in the future, it is likely that landlords would make the changes when the heating systems came to the end of their useable lives.

2.4 Summary

In summary, the reviewed scenarios highlighted the importance of, and the need for, the reduction of energy demand through the thermal improvement of the existing building stock. The improvement of the thermal performance of existing buildings was then identified as an appropriate response by large-scale landlords to the various UK energy scenarios. The next Chapter will examine the current state of the thermal performance of the UK building stock and how it is being improved in order to meet UK targets.

3 THERMAL PERFORMANCE OF THE UK BUILDING STOCK

This Chapter examines the current state of thermal performance improvement in England, and identifies that it is slower than what is expected. To examine this further, barriers to thermal envelope improvements are investigated from both theoretical and empirical perspectives. One particular barrier, the conflict within the planning system between thermal envelope improvements and conservation policy, is identified as a commonly assumed barrier, but also as a gap in the academic literature, as to why this is the case.

3.1 Measuring thermal performance

The EU *Energy Performance of Buildings Directive*, discussed in Section 2.1.2, mandated the generation of an Energy Performance Certificate (EPC) for all buildings in the EU which are sold, rented, or constructed (European Parliament and Council, 2002). To address their obligation under this directive, the UK Government established the National Calculation Method (NCM) to assess the energy performance of buildings. Through the NCM, two common tools were established to measure energy performance of buildings- the Simplified Building Energy Model (SBEM) for non-domestic buildings and the Standard Assessment Procedure (SAP) for dwellings (BRE, 2009).

SAP is the standard used by DECC to assess and compare the energy and environmental performance of dwellings in an accurate and reliable way that standardises occupant conditions (DECC, 2013e). However, it is important to note that when looking at SAP or SBEM measurements, while thermal performance is a significant component, other variables are included in the assessments. SAP calculations include building geometry,

ventilation, heating systems, fuel used, and renewables in addition to construction and insulation properties (BRE, 2011). SBEM calculations include building geometry, use, heating systems, ventilation, and lighting in addition to construction (BRE, 2009). Due to mandatory EPCs, SBEM and SAP are the most common tools used for discussing the energy performance of the existing building stock. However, while both ratings are indicators of the thermal performance of the buildings they are applied to, neither can be used as wholly accurate.

The measure of a building's thermal performance used in SBEM and SAP is based on how quickly heat escapes from the inside to the outside through the various materials that make up the *building fabric* or *building envelope*. This heat transfer co-efficient is known as the *U-value* which is expressed as watts per square metre, per degree Kelvin or, W/m^2K. A high U-value indicates a poor level of thermal performance, while a low U-value indicates high levels of insulation properties. U-values are useful in building measurement because they can represent the heat loss of a composite building element, not just the performance of individual materials (RIBA, 2013). U-values are calculated using thermal simulation software which follows agreed conventions and standards based on different construction typologies (BRE, 2013). For understanding attributes of individual modern materials and their combinations[1] where heat transfer can be measured in laboratory settings, U-values may be considered accurate.

However, there has been some critique of the assumed U-values that are used for measuring the performance of *in situ* assemblies. The way buildings are actually constructed in the field, and assemblies are combined, can result in unexpected details. Some of these details have been shown to cause thermal bridging which reduces the overall performance of the thermal envelope and is not accounted for in the SAP calculations (Little & Arregi, 2011; Zero Carbon Hub, 2013). In addition, there has been critique of the standard U-values used for measuring the thermal performance of historic materials in the standardised software packages. In particular, the Society for the Protection of Ancient Buildings (SPAB) carried out a research project which measured seven *in situ* walls of assorted traditional construction types and included analysis of the measurements of 27 additional *in situ* wall constructions. Their findings showed an average *in situ* U-value of 1.24 W/m^2K for 11 solid brick walls compared to the 2.1 W/m^2K value used in SAP (Rye & Scott, 2012). The Sustainable Traditional Buildings Alliance (STBA) noted that therefore, the likely benefits and paybacks from some retrofit

[1] In this document, the combination of materials that make up an entire building component is referred to as an *assembly*. For example a *wall assembly*, *roof assembly*, or *floor assembly*, or generically, a *construction assembly* or simply *assembly*.

measures, such as solid wall insulation, may be less than assumed; and that SAP values should not be used in their current form as the basis for estimating the U-values of traditional buildings. STBA also noted that heat loss in traditional buildings is additionally affected by air permeability and the presence of moisture, and advocated a more holistic view to thermal performance (May & Rye, 2012).

3.2 Rate of thermal performance improvement in UK stock

To understand the rate of the thermal performance improvement of existing buildings, it is necessary first to understand the status quo. The thermal performance of new buildings and some building alterations is moderated through compliance with the UK Building Regulations which sets maximum U-values for building components. Since the unification of the Building Regulations in 1965, there has been a steady improvement in energy efficiency standards (Lowe & Bell, 1998) as shown in Table 3.1.

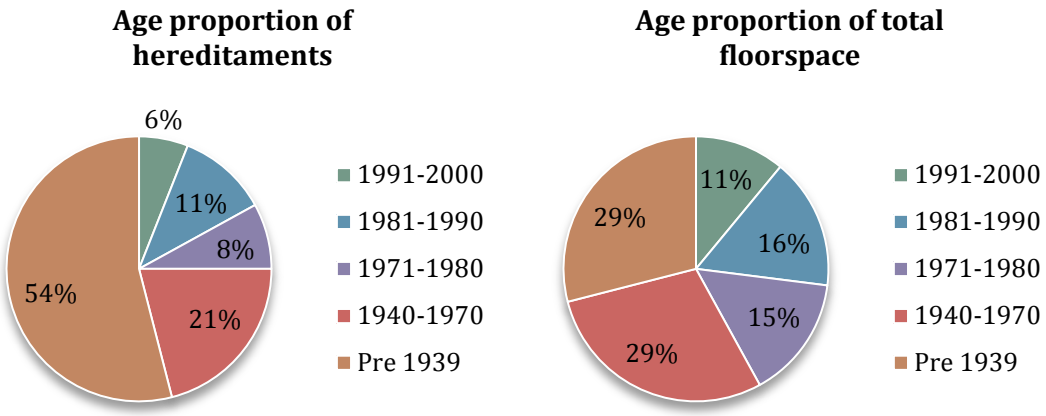
The UK has been building new homes at approximately 1% of the stock per year (DCLG, 2006b; Kelly, 2010). Kelly notes that as the energy performance and thermal efficiency of these dwellings are dictated by the increasingly stringent building regulations, it is the existing stock, rather than the new build that should be the primary focus for the built environment with respect to energy futures (Kelly, 2010). To understand the magnitude, it is estimated that 70% of the total 2010 building stock will still be in use in 2050 (Kelly, 2010; Stafford, Centre for the Built Environment, Leeds Metropolitan Univesity, & Leeds Sustainability Institute, 2011).

In 2000 there were 1.34 million non-domestic hereditaments including retail, office, factory and warehouse properties. As shown in Figure 3.1, in the non-domestic sector, 54% of properties were constructed before 1939, although this only accounted for 29% of the total floor space (ODPM, 2006).

Table 3.1 : Building Regulation Insulation Standards (DCLG, 2013b; King, 2007)

Year	***U-Values (W/m²K)***			
	Wall	**Roof**	**Floor**	**Windows**
1965	1.7	1.4	-	5.7
1976	1.0	0.6	-	5.7
1985	0.6	0.35	-	5.7
1990	0.45	0.25	0.45	5.7
1995	0.45	0.25	0.45	2.2-3.7 (dwelling) 3.3 (non-dwelling)
2002	0.35	0.25	0.25	2.0 (wood) 2.2 (metal)
2006	0.35	0.25	0.25	2.2
2010	0.28	0.18	0.22	1.6 (dwelling) 1.8 (non-dwelling)

Figure 3.1 : Age of Commercial UK Stock, 2000 (ODPM, 2006)



In the domestic sector, there were 26.59 million homes in 2010 of which 5.78 million, or 21.7%, were constructed before 1918 as shown in Figure 3.2 (Palmer & Cooper, 2012). The 2011 *English Housing Survey* noted that 95% of the existing UK housing stock is of traditional construction with masonry or timber as the main structural component as shown in Figure 3.3. Solid masonry is the second most common at 27% of the stock (DCLG, 2013a). In 2006, the Department for Communities and Local Government (DCLG) published a report using data from the 2004 *English House Condition Survey* which illustrated that there was a strong correlation between SAP rating and age of dwelling, as shown in Figure 3.4 (DCLG, 2006b). Comparing this to the construction types in Figure 3.3 suggests there is also a correlation between SAP rating and construction type as the lowest performing homes by age are also the majority of homes built using solid wall construction. While it is important to take into consideration the criticisms of SAP calculations for older dwellings as discussed in the previous section, it is equally important to note that the *in situ* average U-value measurement of 1.24 W/m^{2}K for sold brick walls (Rye & Scott, 2012) still falls well short of the 2010 building regulations maximum requirement of 0.28 W/m^{2}K (HM Government, 2010b, 2010c). This indicates that although the differences may not be as great as Figure 3.4 illustrates, there is still a significant gap between new and old construction, and substantial room for thermal improvement, particularly in older, solid wall properties.

Figure 3.2 : Age of Domestic UK Stock, 2010 (Palmer & Cooper, 2012)

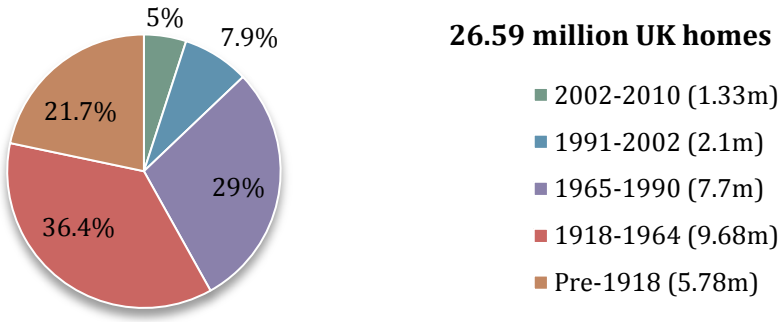


Figure 3.3 : Construction type by dwelling age 2011 (DCLG, 2013a)

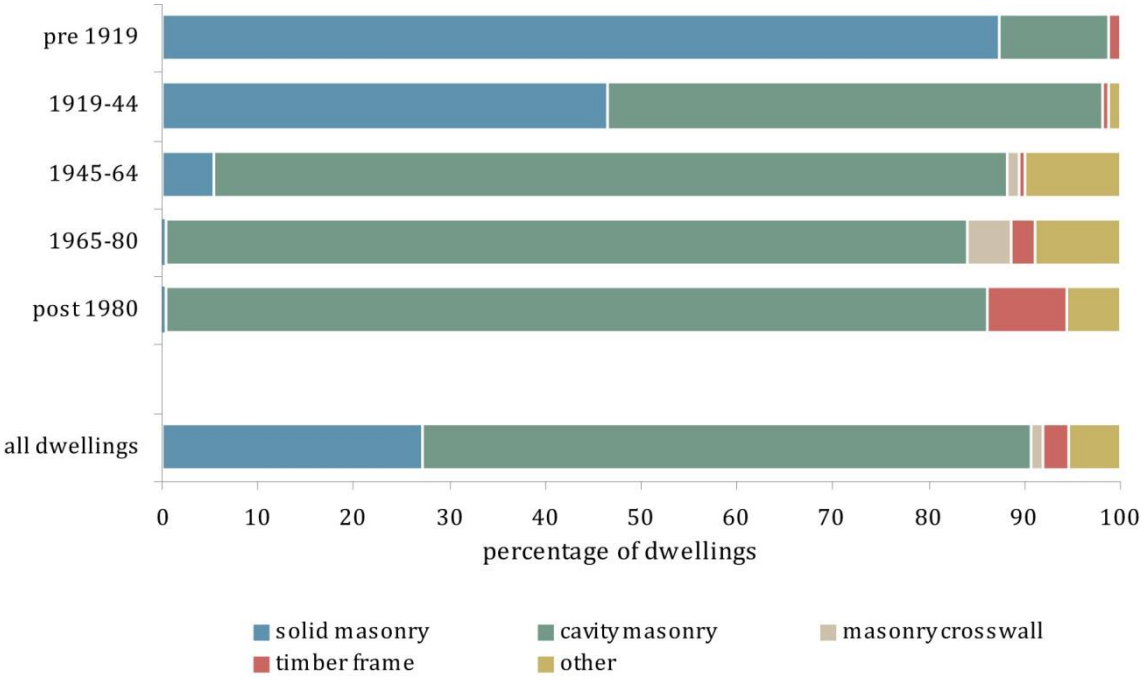
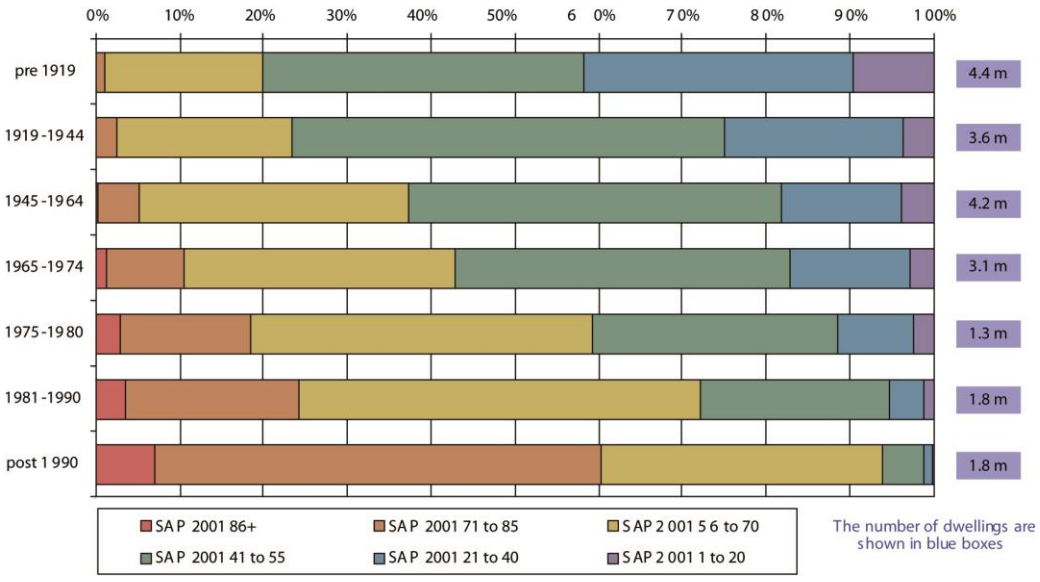


Figure 3.4 : Energy Performance in Existing Dwelling Stock, 2004 (DCLG, 2006b)



3.2.1 Initiatives to improve the energy efficiency of the existing building stock

In addition to the tightening of the Building Regulations, the UK Government has introduced a number of initiatives to improve energy efficiency in buildings by reducing energy demand, as detailed in Table 3.2. The majority of demand reduction initiatives have focused on residential properties, many with an emphasis on disadvantaged households. DECC stated in 2012 that the policy framework for the energy efficiency agenda for households was well covered by existing initiatives, although they noted that there was a need to maximise how they worked. Reflecting the lack of initiatives in the non-domestic sector illustrated in Table 3.2 they emphasised the scope for further policy interventions in the commercial and industrial sectors that are not covered by existing policies (DECC, 2012).

Table 3.2 : UK Built Environment Energy Demand Reduction Initiatives

Years	*Programme*	*Description*	*Domestic*	*Non-Domestic*
1994-2002	Energy Efficiency Standards of Performance 1, 2, and 3 (EESoP) (Ofgem & Energy Saving Trust, 2003)	Energy suppliers met targets by setting up schemes to deliver energy efficiency measures such as insulation, lighting, heating and appliances with two thirds of recipients being disadvantaged.	✓	
2002-2008	Energy Efficiency Commitment 1 and 2 (EEC) (Ofgem, 2013b)	Set targets on energy suppliers to achieve improvements in energy efficiency by providing measures to households in Great Britain.	✓	
2004-2015	Landlord's Energy Savings Allowance (HM Revenue & Customs, 2009)	Tax allowances available for qualifying expenditures on specified energy saving items.	✓	
2005-2013	Warm Front (GOV.UK, 2013b)	Provided assistance to eligible households with the installation of heating and insulation in order to improve energy efficiency and to reduce fuel poverty.	✓	
2008-2012	Carbon Emissions Reduction Target (CERT) (Ofgem, 2013a)	Required certain gas and electricity suppliers to meet a carbon emissions reduction obligation by promoting the uptake of energy saving measures in domestic properties in Great Britain.	✓	
2009-2012	Community Energy Saving Programme (CESP)	Required certain gas and electricity suppliers to deliver energy saving measures to domestic consumers in low income areas of Britain.	✓	

2011-	Carbon Reduction Commitment (CRC) Energy Efficiency Scheme (DECC, 2013b)	A mandatory scheme to encourage large public and private sector organisations to cut emissions based on electricity use.		✓
2011-2015	Decent Homes (DCLG, 2006a; HCA, 2013)	A programme to provide funding to social landlords to bring their stock up to the 'Decent Homes Standard' which includes 'providing a reasonable degree of thermal comfort'.	✓	
2013-2016	Ready for Retrofit (Energy Saving Trust, 2013c)	Offers social landlords in south west England funding to improve energy efficiency of their existing stock, in particular for harder to treat properties and more expensive refurbishments.	✓	
2013-	Green Deal (GOV.UK, 2013a)	A scheme to fund energy-saving improvements through up-front cost loan funding repaid through the subsequent savings on the energy bill.	✓	✓
2013-	Energy Company Obligation (ECO) (Energy Saving Trust, 2013b)	Requires the big six energy suppliers to: provide heating and insulation improvements for low-income and vulnerable households; provide funding to insulate solid wall properties and hard to treat cavity wall properties; and to provide insulation measures to people living in the bottom 15% of the UK's most deprived areas.	✓	
2018-	Energy Act 2011 (Great Britain, 2011a)	From 2018 at the latest, it will be unlawful to rent residential or business premises which do not reach a minimum energy efficiency standard (currently assumed to be an EPC of E)	✓	✓

3.2.2 Thermal improvement of existing buildings

Before the UK emission reduction targets were set, there were already improvements being made to the efficiency of the existing building stock. From 1970 to 2012, there were substantial improvements to energy efficiency in dwellings made by improved heating efficiency and insulation; without which, energy use from households would be almost double (DECC, 2012). In the non-domestic sector, there was a 15% emission reduction from 1990 to 2007 (CCC, 2009). While significant, the scenario analysis upon which this dissertation is based suggests it is more critical to look at recent improvement trends; specifically from 2008, when the UK emission reduction target was set.

The 2013 *Progress Report to Parliament* stated that in 2012, emissions from buildings accounted for 37% of total UK GHG emissions (CCC, 2013). The Committee on Climate Change (CCC), who are responsible for the report, noted that between 2003 and 2008, buildings' carbon dioxide (CO_2) emissions fell by 3% mainly due to improved energy efficiency. Since 2008, they have fallen by a further 8% but have shown year-to-year fluctuations due to economic and temperature effects. The CCC notes that in 2012 overall, building emissions were 2% above the level expected when progress indicators were set in 2009 (CCC, 2013). Although 2013 projections suggest the UK is on track to meet its first three legislated carbon budgets, there is an expected shortfall over the fourth carbon budget (GOV.UK, 2013c).

For residential buildings, the CCC comments that 2012 saw a higher number of installations of insulation measures due to CERT and CESP ending, and the energy companies needing to meet their targets. They warned that they expect the uptake of insulation to slow considerably as the large subsidies for loft and cavity wall insulation have ended. They illustrated this by noting that industry figures suggested there were 44,000 cavity walls insulated in the first three months of 2013 compared to 140,000 in the first three months of 2012 (CCC, 2013). Figure 3.5, Figure 3.6, and Figure 3.7 show the cumulative installation of loft, cavity wall, and solid wall insulation in homes from 2008 and projected to 2015. Data was taken from the Office of Gas and Electricity Markets (Ofgem), DECC, and CESP and analysed by the CCC. The CCC trajectory for Figure 3.5 and Figure 3.6 was based on a previous policy commitment to insulate all lofts and cavities by 2015. While loft insulation levels were above the trajectory to meet this target, cavity wall insulation levels were not. The solid wall insulation trajectory was based on insulating 25% of existing homes and was also well below the target. The CCC concluded by stating that as of 2012 there were an estimated 5-7 million lofts with insufficient levels of insulation, as well as 4-5 million unfilled cavity walls; and that while there was an obvious start on solid wall insulation, 'much larger installation numbers will need to be delivered to help meet carbon budgets' (CCC, 2013).

For the non-domestic building sector, the CCC carbon budget trajectories expect a 36% emission reduction by 2020 from 2008 levels. Data on specific measure indicators was not produced, as there was a lack of data for the non-domestic sector (CCC, 2013). Indeed, the number of non-domestic buildings in the UK is difficult to estimate (Steadman, Bruhns, & Rickaby, 2000). Best estimates in 1994 suggested there were approximately two million non-domestic premises in the UK although this includes groupings of buildings, as well as mixed-use buildings (Bruhns, Steadman, Herring, Moss, & Rickaby, 2000). Due to this lack

Figure 3.5 : Loft insulation cumulative installations 2008-15 (CCC, 2013)

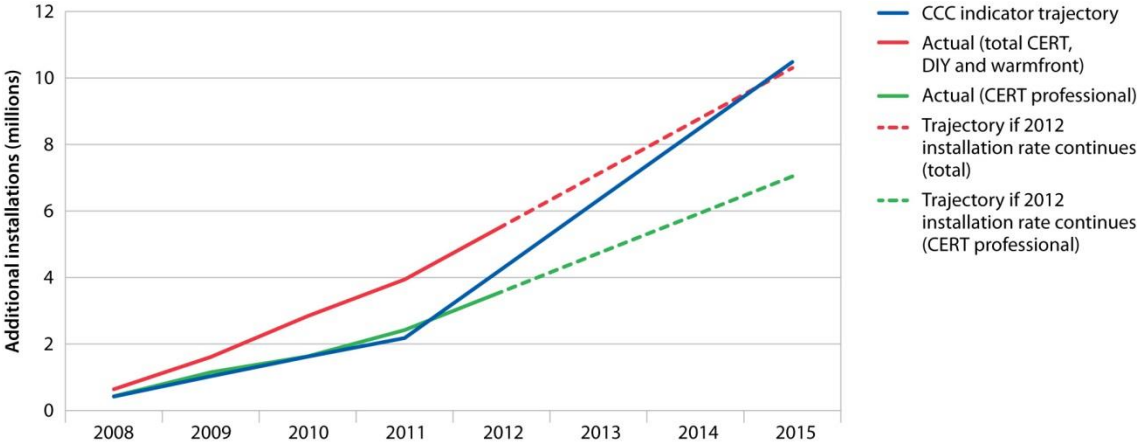


Figure 3.6 : Cavity wall insulation cumulative installations 2008-15 (CCC, 2013)

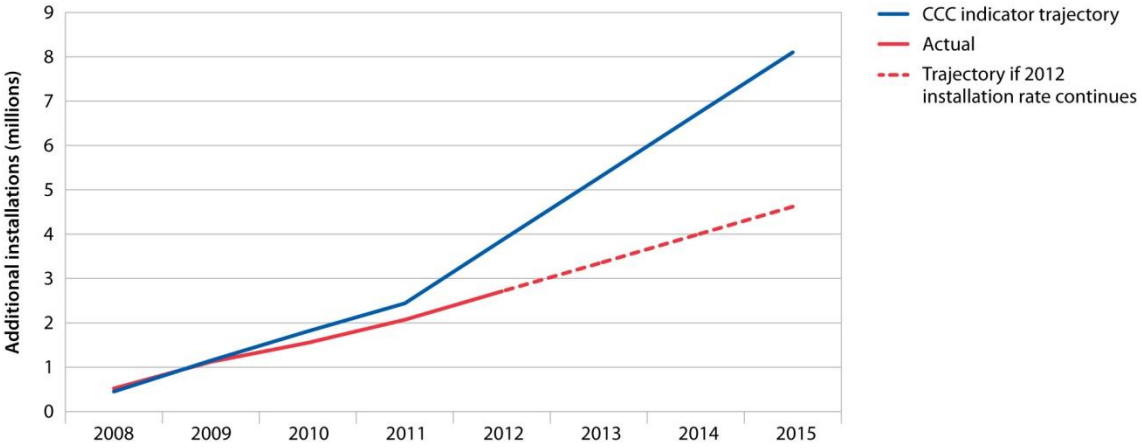


Figure 3.7 : Solid wall insulation cumulative installations 2008-15 (CCC, 2013)

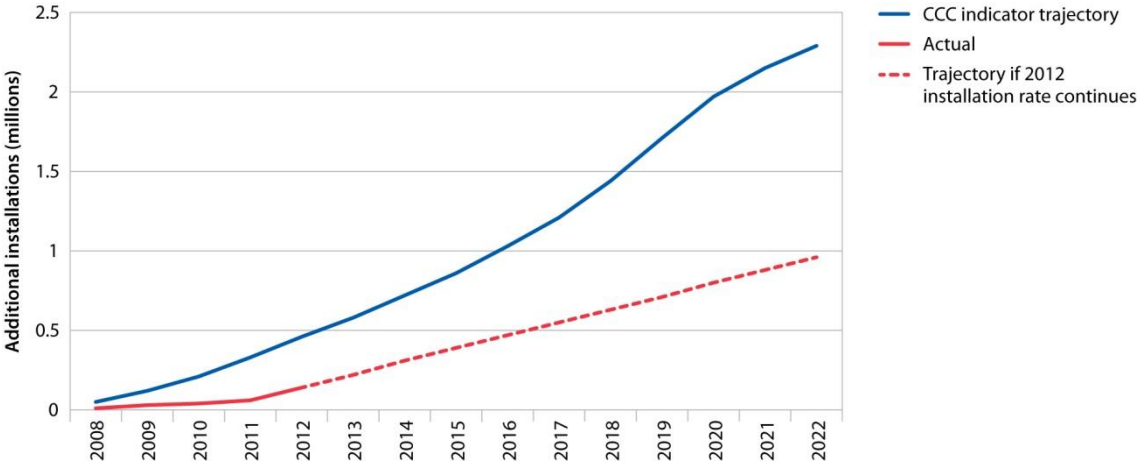
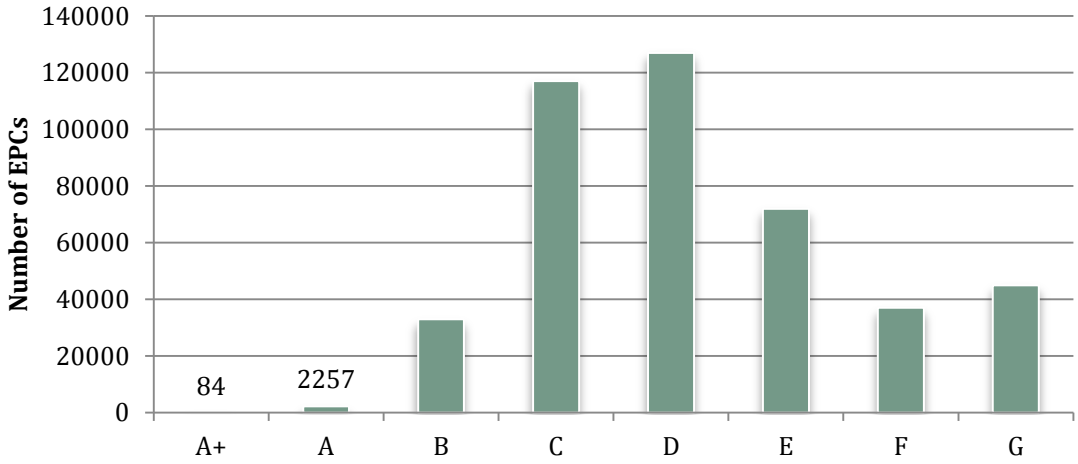


Figure 3.8 : Number and rating of non-domestic EPCs 2013 (CCC, 2013)



of information, EPCs and Display Energy Certificates (DECs) were used for the CCC analysis. In June 2013, only 427,814, or less than 25%, non-domestic EPCs had been issued with only 8% achieving a rating of B or above, as shown in Figure 3.8. Concurrently, there were 154,515 DECs lodged with 20% being rated F or G. The CCC concluded that this suggests there has been little progress in the non-domestic sector and recommended that the Government should develop more comprehensive policies in this area (CCC, 2013).

With clear evidence of Government priority and policy support for thermal performance improvement, it is critical to understand why buildings are not being improved at the rates that are desired or expected. The next section examines the barriers to improving thermal performance of existing buildings.

3.3 Barriers to improved thermal performance

The *Energy Efficiency Gap* is understood as the difference between the actual current or future energy use and the optimal current or future energy use (Jaffe & Stavins, 1994) or the amount of energy households and businesses currently and 'should' consume relative to some notion of the optimal level (Klemick & Wolverton, 2013). This has been well investigated in the literature, particularly within the field of economics, where the gap was seen as an instance where society acted irrationally by not maximising on the financial gains that energy efficiency improvements represent (CfSD, 2012a; Sanstad & Howarth, 1994; Sorrell et al., 2000).

The neo-classical economic approach to the energy efficiency gap identifies barriers under the hypothesis that individuals have consistent and rational preferences, which they seek to satisfy through market transactions. In particular, the literature in this area rejects the concept that a lack of energy efficiency technology uptake is due to market failures which

would justify a public policy intervention to improve economic efficiency (Sorrell et al., 2000). Instead, they identify a number of market barriers which are 'merely benign characteristics of well-functioning markets' (Sutherland, 1996) such as: rational cost minimising behaviours (Hassett & Metcalf, 1993); a lack of information about the magnitudes of savings that can be obtained from different investments (Metcalf, 1994); and the risk of irreversible investments with uncertain returns and the uncertainty of future energy pricing impacting on discount rates (Jaffe & Stavins, 1994; Metcalf, 1994).

The view that all actors operate rationally in regard to energy efficiency has been strongly contested in the literature; asserting that the rationality hypothesis is a poor representation of actual behaviour (Sanstad & Howarth, 1994; Sorrell et al., 2000). Sanstad and Howarth proposed a *transactional economics* approach to looking at the gap; suggesting it was necessary to link empirical findings to theory to truly understand the barriers. Additionally, they stated that certain identified market failures would not necessarily be addressed through government interventions (Sanstad & Howarth, 1994). Their seminal approach to barriers to energy efficiency has influenced much of the literature since (Sorrell, 2004).

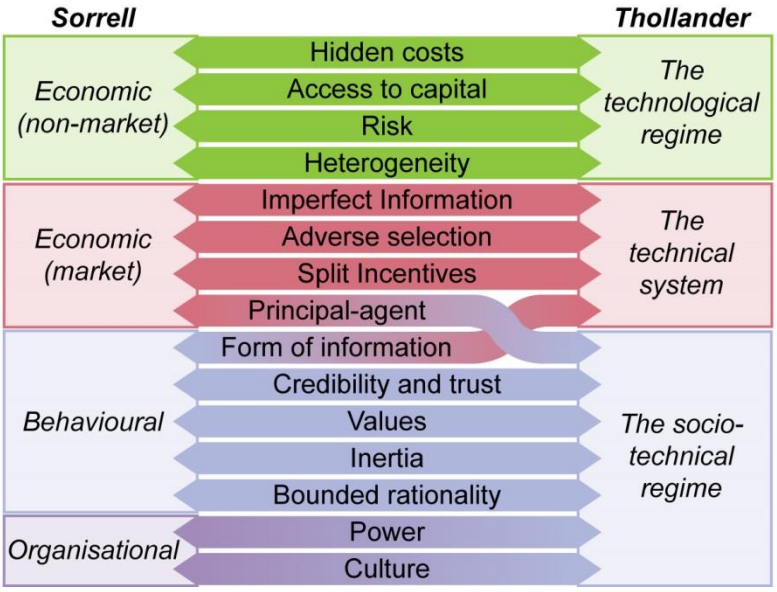
Building on this position, as part of the BARRIERS project, Sorrell, et al. developed a taxonomy of barriers to energy efficiency. To do so, they used 'ideas from several theoretical traditions, including neo-classical economics, organisational economics, behavioural theory and organisational theory'. The 15 barriers they identified and the perspectives they relate to are shown in Table 3.3 (Sorrell et al., 2000).

Thollander, et al. used *transition theory* to re-classify these barriers using Geels, et. al.'s evolutionary model for socio-technical change which 'focuses on the dynamics in changing artefacts, technologies, regimes and overall society' and argues that technological and social change are interrelated (Geels, 2004; Thollander et al., 2010). The three perspectives they identified included: *the technical system* – where results are restricted to technology and its associated costs; *the technological regime* – where results are influenced by human factors but coupled to the technology in question; and, *the socio-technical regime* – where the results are heavily influenced by human factors and less by the technology in question. They proposed that these definitions provide guidance on the appropriate method approach that will be necessary to address them, as finding solutions to the gap is vital for solving the climate change problem (Thollander et al., 2010). Their barrier classification is compared to Sorrel, et al. in Figure 3.9.

Table 3.3 : Energy Efficiency Barriers adapted from (Sorrell et al., 2000)

Perspective	*Barrier*	*Claim*
Economic (non-market failure)	Heterogeneity	A particular technology or measure may be cost effective on average, but not in all cases.
	Hidden costs	Overestimation of efficiency potential due to failure to account for reduction in benefits or additional associated costs.
	Access to capital	Insufficient funds either from capital or borrowing may prevent measures being implemented.
	Risk	Rational response to risk may require shorter paybacks for energy efficiency investments.
Economic (market failure)	Imperfect information	Lack of information may lead to cost effective energy efficiency opportunities being missed.
	Split incentives	Opportunities are likely to be foregone if the party cannot appropriate the benefit of the investment.
	Adverse selection	Purchasers may not have robust information on energy efficiency of products and tend to select goods on the basis of visible aspects such as price. Includes reluctance to pay a premium for high efficiency products based on lack of information and confidence.
	Principal-agent relationships	When two parties have different interests and asymmetric information such that the principal cannot directly ensure that the agent is always acting in its best interest.
Behavioural	Bounded rationality	Constraints on time, attention, and the ability to process information leads to reliance on imprecise routines, rules of thumb, and non-optimised decisions.
	Form of information	To be effective, information must be specific, personalised, vivid, simple, and available close to the time of the decision.
	Credibility and trust	If these factors are absent, inefficient choices will be made.
	Inertia	Agents resist change because they are committed to what they are doing and justify inertia by downgrading contrary information, creating bias. Gains are also treated differently from losses. Causes individuals to favour the status quo.
	Values	Individuals motivated by environmental values may give a higher priority to efficiency improvements than those that are not.
Organisation theory	Power	Often the party in control of energy management has relatively low organisational status meaning the scope for effective action may be circumscribed.
	Culture	Efficiency can be encouraged through a developed culture of values, norms, and routines that emphasise environmental improvement. This is more likely to be successful if 'championed' by a key individual within top management.

Figure 3.9 : Barrier classification comparison (CfSD, 2012a)



These barrier categories are not unambiguous, as one real-world phenomenon may be explained by several of the theoretically derived barriers (CfSD, 2012a; Thollander et al., 2010; Weber, 1997). A review of a number of empirical barrier studies to energy efficient retrofit in the UK found different types of barriers from those described above, often identified as 'challenges' or 'constraints' in the literature. These barriers were often practical in nature, focusing in on specific problems or issues with the energy efficient improvement of existing buildings. As suggested, the empirical barriers found in the literature could be explained by a number of the theoretically derived barriers, although were typically not described in that way (CfSD, 2012a).

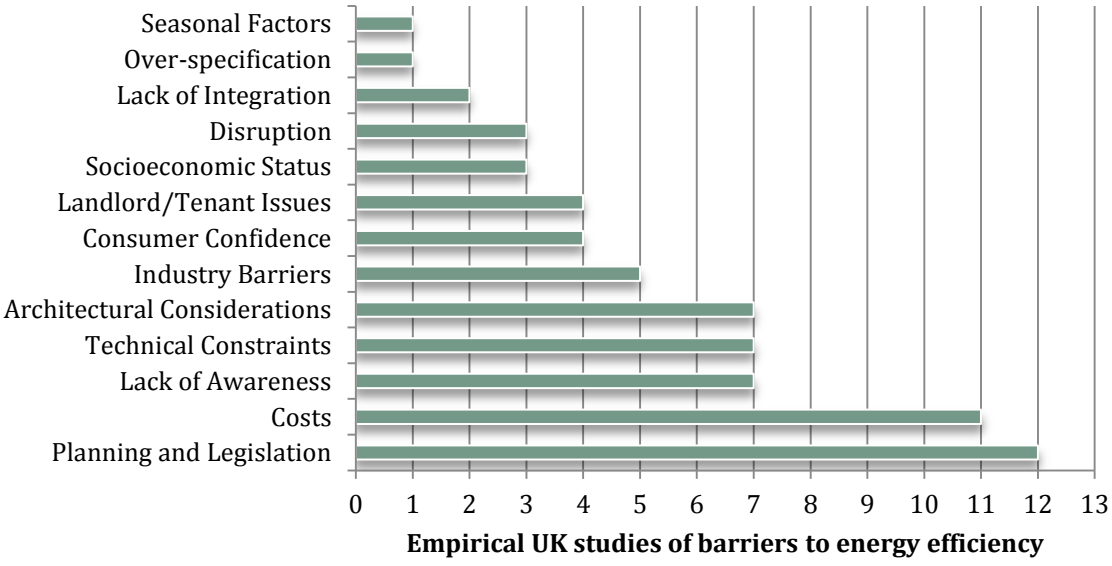
As empirical barriers were often not identified explicitly as 'barriers', finding them in the literature was challenging. A review of the academic literature found only a few publications which focused on empirical barriers to energy efficiency in the built environment. Therefore the search was expanded to include non-academic industry sources. Table 3.4 shows the 13 relevant documents found and reviewed for this research, identifying the source type and year of publication.

A content analysis was done on the specific empirical barriers that were mentioned and discussed in the literature in Table 3.4 and sorted into overarching standardised barrier categories shown in Figure 3.10. This figure illustrates the frequency of occurrence of these overarching categories. It is important to note that in most instances, more than one explicit barrier was discussed under each overall category for each source.

Table 3.4 : Identified empirical UK studies of barriers to energy efficiency

Title	*Source Type*	*Year*
Making the link: climate policy and the reform of the UK construction industry (Sorrell, 2003)	Journal Article	2003
'Stock Take': Delivering improvements in existing housing (Sustainable Development Commission, 2006)	Government Report	2006
Hard to treat homes in England (Beaumont, 2007)	Conference Paper	2007
'Teach in' on Energy and Existing Homes – restoring neighbourhoods and slowing climate change (CASEreport 56, 2008)	Industry Publication	2008
What are the barriers to the green refurbishment of historic residential buildings in UK cities and how can they be overcome? (Emmerson, 2008)	Master's Thesis	2008
Key Policies for Accelerating Low Carbon Retrofit in the Existing Domestic Building Stock (The Existing Homes Alliance, 2010)	Industry Publication	2010
Common barriers and constraints for thermal upgrades (Institute for Sustainability, 2011)	Industry Publication	2011
Low carbon housing refurbishment challenges and incentives: Architects' perspectives (Davies & Osmani, 2011)	Journal Article	2011
Refit West: Update from the front line (Ross, 2011)	Industry Publication	2011
Domestic UK retrofit challenge: Barriers, incentives and current performance leading into the Green Deal (Dowson et al., 2012)	Journal Article	2012
Barriers to domestic retrofit – learning from past home improvement experiences (Mallaband, Haines, & Mitchell, 2012)	Conference Paper	2012
Closing the energy efficiency gap: A study linking demographics with barriers to adopting energy efficiency measures in the home (Pelenur & Cruickshank, 2012)	Journal Article	2012
Do U-value insulation? England's field trial of solid wall insulation (Stevens & Bradford, 2013)	Conference Proceedings	2013

Figure 3.10 : Frequency of overarching barriers from 13 empirical UK studies



When specifically considering the thermal performance improvement of conservation buildings by large-scale landlords, the overarching barriers of planning and legislation, costs, lack of awareness, technical constraints, architectural consideration, industry barriers, and consumer confidence were found to be the most relevant based on the explicit barriers discussed in the literature. Landlord/tenant issues, disruption, and lack of integration barriers also had some significance. Socioeconomic status, over-specification, and seasonal factor barriers were not found to be relevant to the research focus area for this dissertation.

One issue with identifying empirical barriers is that, 'barriers are well known to construction industry specialists … [but are] relatively neglected in the academic literature on energy policy' (Sorrell, 2003). Of the four journal articles found that discussed empirical barriers relevant to the thermal improvement of conservation properties, three looked at domestic (Davies & Osmani, 2011; Dowson et al., 2012; Pelenur & Cruickshank, 2012) and one looked at non-domestic properties (Sorrell, 2003). The three articles looking at residential issues all mentioned planning as a barrier, the most common overarching barrier in the literature reviewed. Davies and Osmani note that:

> *A significant number of dwellings within the UK existing housing stock has great historical value, and is therefore protected by multiple public interest groups and heritage conservation orders, which have prevented directly or indirectly the adoption of low carbon housing refurbishment principles and strategies. This has created tension between energy efficiency suppliers and architectural heritage conservation bodies.* (Davies & Osmani, 2011)

However, this assertion is not based on their research, but presented in the background and literature review drawn from English Heritage (English Heritage, 2003), and a journal article on policy for sustainable refurbishment that used policy documents and associated professional commentary to draw their conclusions (Mansfield, 2009). Through 45 questionnaires and eight interviews of refurbishment architects across the UK, Davies and Osmani identified four key challenges to low carbon housing refurbishment: 'financial and business challenges'; 'design and technical challenges'; 'legislative challenges'; and, 'environmental and cultural challenges' (Davies & Osmani, 2011). Within each of these categories, the tension between conservation and energy efficiency was highlighted in different ways, making non-direct reference to their position as stated above.

Dowson et al. also presented the challenge of conservation policy to making thermal improvements in the background and literature review section of their article. They draw on a conference paper also used in this research (Beaumont, 2007), and the seminal research report *The 40% House* (Boardman et al., 2005). They comment on the

restrictions on external wall insulation, 'since it changes the external appearance of a dwelling and planning permission prohibits its application on listed buildings or those in conservation areas' (Dowson et al., 2012). In their research they examined Government incentive programmes and their barriers through a literature review and modelling of secondary sources. They summarised key incentive programmes and their issues, for example, they noted that with CESP, a key challenge was 'planning delays for solid wall insulation' (Dowson et al., 2012). The main focus of their work was on the Green Deal where they found: a lack of incentives for investors; technical issues with making improvements; results of refurbishments not achieving the promised savings; and, issues regarding the impact of the socio-economic status of householders. While not addressing conservation again explicitly in their findings, the conclusion notes that many hard-to-treat solid walled properties, which are most likely to have conservation value, 'will not be insulated by 2050 without stronger incentive schemes, active promotion and technological innovation' (Dowson et al., 2012).

Pelenur and Cruickshank identified barriers affecting the adoption of domestic energy efficiency measures through a thematic analysis of 198 general population interviews carried out in the urban areas of Cardiff and Manchester. The barrier categories they identified included: beliefs/information; cost; family/partner/housemate; institutional; landlord-tenant/housing associations; none (no barriers); personal behaviour; and, the property itself. The 'property itself' barrier specifically included a sub-barrier of conservation and heritage, 'in which owners were unable to install energy efficiency measures because of planning issues, specifically if they were either [to a] listed building or in a conservation area' (Pelenur & Cruickshank, 2012). Some of the other barriers they identified and discussed could be indirectly linked to conservation issues, but were not explicitly discussed in this way.

In her conference paper that examined the number and type of hard-to-treat homes in the UK, and the technologies available for improving their energy efficiency, Beaumont advocates that, 'the order of priority for energy efficiency improvements should first be to improve the building fabric' (Beaumont, 2007). She highlights that the potential requirement for planning permission for wall insulation may hinder implementation, citing a Committee report from the UK House of Lords Science and Technology Committee on energy efficiency. This report cites two cases where thermal improvement measures were not permitted due to conservation intervention and states that 'while the architectural heritage must be respected, the attitude of local planning authorities and English Heritage to refurbishment of older properties often appears to be unhelpful' (House of Lords, 2005-6).

Mallaband et al. conducted semi-structured interviews with 20 UK owner occupier households of hard-to-treat sold walled properties to identify barriers to domestic retrofit as part of the CALEBRE project. Their conference paper identified nine common barriers: householder values; cost; professionals; time; property features; life stage; attitudes to older houses; perceived difficulty; and regulations. They also identified seven less common barriers. They note that many of the barriers identified 'show a range of interrelated factors, many particular to older properties' (Mallaband et al., 2012). A number of barriers were linked to the aesthetic qualities of older properties and a desire to preserve them including householder values, property features, and attitudes to older houses. Conversely, a number of barriers were linked to the complications with updating older properties while maintaining aesthetic features including cost, property features, attitudes to older houses, perceived difficulty, and regulations.

The final conference paper to be discussed was not about barriers to energy efficiency directly. Stevens and Bradford undertook a performance analysis on 93 dwellings in England, 35 of which were intended to be insulated in a field trial by the Energy Saving Trust. 11 of these were able to be insulated and the majority of the paper discusses the U-value measurements and associated implications. Significant to this dissertation, in what was otherwise a quantitative research paper, the authors emphasise a qualitative finding of the work that, 'one of the key challenges for external insulation was the English planning system' (Stevens & Bradford, 2013). They note that the 'technical, social and legal challenges encountered during the process of installation… are reasons why only 11 of the original 93 dwellings have completed installations of insulation' and that 'these barriers must be addressed in order to undertake a mass refurbishment of UK sold walled homes' (Stevens & Bradford, 2013).

These articles and papers, along with the industry documents reviewed, support Sorrell's statement that empirical barriers may be understood or assumed within the construction industry but are not well addressed in the academic literature, particularly with respect to the UK planning system as a barrier. Issues of the impact of conservation were also often presented as assumed in terms of higher costs or the lack of technical skills, although the work of Mallaband et al. shows that this assumption should not always be attributed to regulatory bodies and instead may be due to the values of the building owner. In the literature reviewed, there was also general agreement that the energy efficiency gap is a complex issue, 'where technical, institutional, market, organisational, and behavioural barriers all play a significant role and are interconnected' (Mallaband et al., 2012; Pelenur & Cruickshank, 2012; Sorrell, 2003; Weber, 1997). This makes it difficult to quantify the material impact of any one individual barrier. However, it is clear from the reviewed

literature that barriers collectively exist which are having an impact on the lack of thermal improvement of solid wall properties.

3.3.1 A gap in the knowledge

From the reviewed literature, planning and legislation barriers were the most frequently mentioned by 12 of 13 sources, with 'the planning system … [seen as] a barrier to action, delivering sub-optimal solutions' (Ross, 2011). However, this barrier was often presented as assumed based on secondary data or based on professional, and tenant or resident perceptions, not on specific research that looked directly at planning as a barrier.

The constraints placed on energy efficiency improvements due to heritage and conservation policies were the most mentioned, in particular with regard to the physical impacts of thermal improvement and microgeneration (Beaumont, 2007; Davies & Osmani, 2011; Dowson et al., 2012; Emmerson, 2008; Institute for Sustainability, 2011; Mallaband et al., 2012; Pelenur & Cruickshank, 2012; Sustainable Development Commission, 2006; The Existing Homes Alliance, 2010). Another frequently discussed barrier was the lack of an agreed standard for refurbishment similar to the *Code for Sustainable Homes* used for new construction as well as confusion regarding the application of the Building Regulations for refurbishment (CASEreport 56, 2008; Davies & Osmani, 2011; Dowson et al., 2012). Additionally the lack of coordination between government departments that help to enable energy efficiency improvements, like DECC and DCLG, and the desire for more top-down guidance and decision making was also identified (CASEreport 56, 2008; The Existing Homes Alliance, 2010).

While the barrier of the conflict between energy efficiency improvements and conservation in planning was broadly assumed, a gap was identified in the literature for exploring why this was the case. This problem conflates a number of explicit barriers from the other empirical barrier categories, often linked indirectly to conservation issues in the literature reviewed. The lack of consensus regarding appropriate technologies can lead to applicants, who submit planning applications, and planning officers, who assess planning applications, being unsure of what thermal improvement measures are appropriate or successful for conservation buildings (Dowson et al., 2012; Emmerson, 2008; Mallaband et al., 2012; Sustainable Development Commission, 2006; The Existing Homes Alliance, 2010). Similarly, the industry barrier of the lack of professional skills and expertise in both the design team and construction industry can lead to landlords submitting inappropriate applications for heritage buildings (CASEreport 56, 2008; Davies & Osmani, 2011; Mallaband et al., 2012; Ross, 2011; Sorrell, 2003). Architectural design considerations and how they are evaluated and assessed are important when considering

how energy efficiency improvements may affect the physical properties and aesthetics of conservation properties, and therefore the acceptability of those changes within planning (Beaumont, 2007; Davies & Osmani, 2011; Emmerson, 2008; Institute for Sustainability, 2011; Mallaband et al., 2012; Pelenur & Cruickshank, 2012; Stevens & Bradford, 2013). Similarly, technical constraints for proposed measures that may improve efficiency but may adversely affect the aesthetic heritage qualities of a property will have an impact on planning decisions (Beaumont, 2007; Davies & Osmani, 2011; Dowson et al., 2012; Institute for Sustainability, 2011; Pelenur & Cruickshank, 2012; Stevens & Bradford, 2013). Finally, the barrier of cost can also be linked to planning constraints due to the use of less common and therefore more expensive materials, bespoke installations, increased design time, and increased construction time in order to meet planning requirements (Beaumont, 2007; CASEreport 56, 2008; Davies & Osmani, 2011; Emmerson, 2008; Pelenur & Cruickshank, 2012; Sorrell, 2003; Stevens & Bradford, 2013; Sustainable Development Commission, 2006).

3.4 Summary

This Chapter has examined how thermal performance is measured, and looked at the current performance of the UK building stock, finding that the rate of improvement is slower than expected or desired. It has also found that there is both a need and significant room for improvement, particularly in older buildings. The barriers to the improvement of the thermal performance of existing buildings were then investigated, finding a significant difference between the theoretical and empirical barriers. From the empirical barriers examined, the barrier of planning, particularly for buildings that are also subject to conservation policy, was identified as widely assumed, but not well investigated. Evidence from the research illustrated that there may be many possible reasons for planning being perceived as a barrier, but no research was identified that explicitly examined planning as a barrier. This identified gap leads to the definition of the primary research question, and basis for this dissertation, 'Why is planning perceived as a barrier?' which is further investigated in Chapter 4.

4 Planning Literature and Relevant Policies

This Chapter first explores the literature on planning application decision-making to investigate why planning may be perceived as a barrier. This specific area for investigation was selected based on the empirical studies reviewed in Section 3.3 that highlighted planning as a commonly assumed barrier to the thermal improvement of conservation properties. Specifically, the empirical studies examined primarily referenced the impact of planning on projects being put forward through the planning system by means of planning applications. Therefore, the literature reviewed focuses on how planning decisions are made. Second, a review of the policies governing the thermal improvement of conservation projects for thermal improvement are identified and reviewed.

4.1 Planning literature

Land-use planning in the UK has, to greater and lesser degrees, always been market supportive and over the past three to four decades has been directed towards facilitating growth (Allmendinger & Haughton, 2012a). Cullingworth and Nadin state that a notable feature of the UK planning system is the extent to which it allows for flexibility in interpreting the public interest. This is in contrast to systems such as the European or United States systems which aim to reduce such uncertainties (Booth, 1999). Flexibility in the UK system enables it to meet the diverse requirements of the constantly changing nature of the problems with which it attempts to deal (Cullingworth & Nadin, 2006). A major influencing factor is therefore the political climate which is usually, but not always, reflected by the planning system. This has resulted in regular shifts in written planning

policy that have sometimes been dramatic (Allmendinger & Haughton, 2012b; Cullingworth & Nadin, 2006).

One result of these shifts is the large number of governmental departments and agencies that are involved in UK planning. As responsibilities have evolved over time and with numerous reorganisations, the structure has a somewhat patchwork appearance. Changing perceptions, conditions, problems, and objectives lead to new policy responses which in turn have led to organisational changes (Cullingworth & Nadin, 2006). This has led to a range of interwoven ways of reworking the powers of the state both vertically and horizontally resulting in a variety of approaches to, and scales of, planning. Within UK planning, a variety of policy scales coexist and the shifting of powers, responsibilities and expectations is a constant process (Haughton, Allmendinger, Counsell, & Vigar, 2010). A result of this has been that planning practices at the local level have not always reflected the national level (Allmendinger & Haughton, 2012a). Planning and planners are embedded within, and achieve their policy goals through, a diversity of planning and non-planning networks consisting of diverse stakeholders (Haughton et al., 2010). Therefore, a key component of the flexibility and application of the UK planning system in practice is the principle of *discretion*.

4.1.1 Discretion in planning

Booth notes that broadly there are two systems of planning. The first, and far more widely adopted system is the regulatory system. This system is characterised by land zoning plans which are intended to provide 'an unambiguous basis for future development that leaves as little to the vagaries of chance as possible' (Booth, 1999). The second is the discretionary system, used in Britain 'and a small number of systems that claim a British inheritance' (Booth, 1999). In this system, the plan can 'never be more than an indication of the future pattern and development' and decision-makers 'are granted wide discretion to determine what considerations are material to the decision being made' (Booth, 1999).

The historic development of the British planning system, and in particular, the empowerment of local authorities to control the development in their local areas, served to underwrite discretionary decision making in British planning (Booth, 1996, 1999). In the 1940's, there was agreement that a universal and mandatory system of development plans was needed. Specifically, this established a system whereby planning applications would be required for all new development, which local authorities would determine with

respect to their *material considerations*[2] and not solely the development plan (Cullingworth & Nadin, 2006; Tait, 2002). This set in place the basis for the current development control system, which is highly directed from the centre. The Government is responsible for legislation upon which planning procedures are based, and it directs and advises on the operation of the system (Claydon, 1998). However, under the discretionary system, policies permit flexibility through the use of phrases such as 'normally', 'may', 'ought to' or 'will consider' (Tewdwr-Jones, 1999). Therefore, plans are indicative instead of binding; and in addition, locally made control decisions are instructed to take into consideration issues of value and social objectives which may be more qualitative in nature (Claydon, 1998).

One issue with the incorporation of, and reliance on values, into decision-making is their relative qualities (Claydon, 1998; West & Davis, 2011). Heritage protection values emphasise a preservation of the material fabric, which is rooted in the history of architectural conservation and has been a fairly stable value. However, other values relating to 'how, why and what buildings should be conserved' have changed over time and with societal preference (Pendlebury, Hamza, & Sharr, 2014). Similarly, the value of carbon consumption reduction may be currently strong, but the means to achieve effective action in terms of reducing carbon emissions is complex and contested (Pendlebury et al., 2014). There are therefore multiple possible outcomes to the debate of how to be more energy efficient while maintaining heritage values; and, which changes to historic buildings and environments are acceptable, and which are not. To complicate this further, the debate is not based on a static set of values, instead, values continue to evolve as both knowledge is gained and societal preferences change (West & Davis, 2011). In practical terms, this results in 'the balance between heritage protection and the carbon agenda … [being] played out through a myriad of individual planning decisions' (Pendlebury et al., 2014).

An impact of the discretionary power given to local authorities was to raise the significance of the decisions made on planning applications, and to hold local authorities responsible for their discretionary decision making. This in turn led to a system of appeals and public inquiries that attempted to help balance the system through providing

[2] According to the Planning Portal, 'material considerations can include (but are not limited to): overlooking/loss of privacy; loss of light or overshadowing; parking, highway safety; traffic; noise; effect on listed building and conservation area; layout and density of building; design, appearance and materials; government policy; disabled persons' access; proposals in the Development Plan; previous planning decisions (including appeal decisions); and, nature conservation. However, issues such as loss of view, or negative effect on the value of properties are not material considerations' (DCLG, 2013b).

regulatory norms (Booth, 1996, 1999). However, unless an application decision is appealed or goes to public inquiry, it may be decided using policy that is implicit in the accumulation of many individual decisions, but is not evident in formal policy documents. This results in a system with a notable absence of certainty (Booth, 1996). In order to address this, 'elaborate rules [are developed] for how decisions should be taken' (Booth, 1996).

The discretionary system implies a high level of trust in the decision-makers (Booth, 1996). The individual decision-makers are identified in the literature as *street-level bureaucrats*, or those who 'interact directly with citizens in the course of their jobs, and who have substantial discretion in the execution of their work' (Lipsky, 2010). The discretion they utilise is 'often an essential corollary to the successful reconciliation of complex and often contradictory policy goals in highly variable local policy contexts' (Catney & Henneberry, 2012). With respect to this research, within the overarching national policy framework there is substantial acknowledgement of the importance of addressing climate change, and of heritage protection (discussed further in Section 4.2). However, 'there is little indication of how to balance or reconcile these potentially competing priorities… leaving to the individual decision-maker the job of reconciling these different policies on a case-by-case basis' (Pendlebury et al., 2014). This can result in 'substantial variation in the implementation of policy at the point of delivery' (Catney & Henneberry, 2012).

4.1.2 Street-level bureaucrats and decision-making

Catney and Henneberry state that street-level bureaucrats 'face various types of conflict, uncertainty and ambiguity' while attempting to do their jobs. These 'may include inadequate resources, unsatisfactory working conditions, unpredictable, uncooperative, sceptical clients, and unclear and ambiguous policy guidelines and job specifications' (Catney & Henneberry, 2012). Lipsky's seminal work from 1980 emphasises the significance of street-level bureaucrats in the understanding of policy; in that their decisions, the routines they establish, and the devices they invent to cope with uncertainties and work pressures become the public policies they are responsible for carrying out (Lipsky, 2010). 'The extent of discretion open to street-level bureaucrats and the ways that it is used continues to be a defining feature of the debate over policy implementation' (Catney & Henneberry, 2012).

The majority of the literature on planning and discretion focuses on agency and the structure of the planning system instead of the discretion of the individual officer (Booth, 1996, 2003; Claydon, 1998; Forsyth, 1999; Tewdwr-Jones, 1999); while the literature that

focuses on the actions of the individual have been primarily focussed on communicative planning (Fischer & Forester, 1993; Forester, 1999; Healey, 1992). However, 'communicative planning draws on theories of rhetoric, argumentation, communication, negotiation, bargaining and power, but pays little attention to theories of discretion' (Catney & Henneberry, 2012). Catney and Henneberry state that the literature therefore presents a paradox; 'It is treated as axiomatic that planners will seek to widen and to use their discretion positively. Yet simultaneously it is suggested that such practice is exceptional' (Catney & Henneberry, 2012).

As evidence for this position, Catney & Henneberry (2012) note that the literature suggests that few planners are eager to exploit the leverage offered by discretion (Forester, 1989; Healey, 1992); and that theories of discretion are examples of what should happen, not what does happen (Forester, 1999; Krumholz & Forester, 1990). This finding is reflected in work done by Tait who used actor-network theory to explore how perceived stabilities within the planning system are built up, what actions they engender, and what ambiguity or room for manoeuvre exists around these stabilities. Through examination of two case studies, he found that planners may draw on established or inherited routines and practices to generate order and predictability (Tait, 2002). Catney and Henneberry comment that:

> *…explaining the extent of discretion open to these actors and the ways in which they exercise it involves understanding the complex interactions between the design of policy regimes, the internal organizational capacity and dynamics of implementation agencies, and the individual motivations of particular street-level bureaucrats.* (Catney & Henneberry, 2012)

Claydon notes that specifically within development control, 'the periods around the submission of an application, when evidence is drawn together and before a recommendation is made to the committee, provide greatest opportunities for officers to exercise discretion' (Claydon, 1998). Pendlebury et al. remark that there are 'established conservation values with their particular visual reading of the built environment coming into conflict with the emergent values and symbolism of carbon control'; and, that 'there is a leaning towards conservation objectives where the two aims may come into conflict' (Pendlebury et al., 2014). This could be attributed to: a valid assessment of the values of society, Government, the local authority, or the decision-makers; or, a manifestation of previously established routines or practice. Alternately, this could also be due to other factors that influence and infiltrate the decision-making process.

One factor of note from the literature is that the fear of blame 'is often a powerful force in shaping the behaviour of street-level bureaucrats, as well as the organisations of which

they are part' (Catney & Henneberry, 2012). In these circumstances, 'institutions and practitioners charged with regulation are necessarily concerned with their own objectives, reputations, and survival'; and may adopt defensive approaches to policy implementation to protect their position (Catney & Henneberry, 2012). Because heritage value is strongly linked to aesthetic qualities and visual appearance, it can be 'more volatile in the short term' (Pendlebury et al., 2014). This could result in the more prominent visual aspects of a proposal taking precedence over the assessment of the total values of the proposal, as changes to the visible environment may generate unwanted public interest at best, and outcry at worse.

The literature is inconclusive about whether conservation values should be prioritised over energy efficiency values. Pendlebury at al. note that, 'much of the time planning policy frameworks present heritage protection and carbon control as equally important objectives, with little indication how to resolve their competing claims, other than through the discretion of the decision-maker' but significantly, that 'the planning system is the arena in which conflicts of value are often resolved' (Pendlebury et al., 2014).

4.2 Key policies and legislative structures

Two different types of legislation are directly involved in the thermal performance improvement of existing buildings – compliance with the Building Regulations and planning approval or consent. The Planning Portal was established by the UK Government as 'an online planning and building regulations resource for England and Wales' and provides detailed information regarding how to determine if and what permission is required (DCLG, 2013b). According to the website:

> *Building Regulations set standards for the design and construction of buildings to ensure the safety and health for people in or about those buildings. They also include requirements to ensure that fuel and power is conserved and facilities are provided for people, including those with disabilities, to access and move around inside buildings. Planning seeks to guide the way our towns, cities and countryside develop. This includes the use of land & buildings, the appearance of buildings, landscaping considerations, highway access and the impact that the development will have on the general environment.* (DCLG, 2013b)

Both the building regulations and planning system are considered essential to delivering projects to the required standards, although each addresses different aspects and stages of project development. According to the National Planning Forum, planning involves a considerable amount of judgement and interpretation, operating within a policy context

that is based less on technical performance standards and involves a high degree of public debate and consultation. Building control involves the compliance of a project to technical standards of building construction and performance through codes and regulations which can involve interpretation on the part of the inspector but is usually less open to debate or discussion (National Planning Forum, 2010). While often, separate permissions are required under both legislative regimes, sometimes only Building Regulations approval may be needed (DCLG, 2013b).

4.2.1 Building Regulations

Although the Building Regulations are a separate regime to planning, there are some overlaps. In particular, planning is specifically involved with the thermal improvement of conservation properties as this section details.

Compliance with Building Regulations is required when undertaking 'Building Work' as defined in regulation 3 of the Building Regulations (DCLG, 2013b). 'Building Work' includes the construction of new buildings, extensions, loft and out-building conversions, the installation of fixed heating or cooling appliances, replacing windows, certain structural alterations, installing cavity insulation, changing the use of a property, underpinning, or for drainage works (HM Government, 2010a). *Part L* of the Building Regulations deals specifically with the 'Conservation of Fuel and Power' and is where the maximum U-values for building components are listed, as previously shown in Table 3.1.

However, exemptions from the energy efficiency requirements of Part L are granted when a building is: listed; in a Conservation Area; or a scheduled ancient monument, and, when compliance with the requirements 'would unacceptably alter their character or appearance' (HM Government, 2010b, 2010c). Special consideration may also be given to buildings which are:

- locally listed by a local authority;
- of architectural and historical interest within national parks, areas of outstanding natural beauty, registered historic parks and gardens, registered battlefields, the curtilages of scheduled ancient monuments, and world heritage sites; or,
- 'of traditional construction that both absorbs and readily allows the evaporation of moisture[3]' (HM Government, 2010b, 2010c).

The regulations go on to state that the guidance given by English Heritage (EH) should be taken into account in determining appropriate energy performance standards for building

[3] Solid-wall masonry construction

work in historic buildings. EH is the UK Government's statutory adviser on the historic environment for England. Officially known as the Historic Buildings and Monuments Commission for England, they are an executive non-departmental public body sponsored by the Department for Culture, Media and Sport. Their principal powers and responsibilities were set out in the *National Heritage Act of 1983* (English Heritage, 2013). The regulations also state that the advice of the local authority's conservation planning officer should be taken into account when assessing what qualifies as 'reasonable provision for energy efficiency improvements for historic buildings' (HM Government, 2010b, 2010c).

Therefore, although the Building Regulations are the legislative context in which thermal improvement standards are set, decision-making concerning appropriate interventions regarding conservation properties takes place within the planning system.

4.2.2 English planning

The four countries of the UK each have their own land use planning systems although the system in Northern Ireland will not yet be fully implemented until 2015. Each system is *plan-led* meaning that national and local policy is set out in formal development plans that describe 'what developments should and should not get planning permission, how land should be protected and seeks to ensure a balance between development and environmental protection in the public interest' (Cave et al., 2013). Although the basic structure of the four systems is similar, there are differences in the detail and in how each system works. Recent changes to English planning have created greater divergence between it and the other systems (Cave et al., 2013). This dissertation narrows its scope by focussing solely on the English planning system.

The English planning system has recently shifted with policies introduced by the Coalition Government from *a spatial planning* paradigm to one of localism and *open source planning* (Allmendinger & Haughton, 2012a). This change in the structure of English planning took place during the research for this dissertation. Therefore, background on both the current policy structure and associated policies, and the previous policy structure and associated policies are included. The policies that were appropriate to the research at the time it was conducted are referenced within the specific research Chapters.

4.2.2.1 Key planning policies

The *Town and Country Planning Act 1990* sets out the formal requirement for English planning permission and was supported by a series of Planning Policy Guidance Notes (PPG). It mandated the creation of county level Structure Plans, district level Local Plans,

and Unitary Development Plans (UDP) for unitary authorities (Great Britain, 1990). *The Planning and Compulsory Purchase Act 2004* amended and repealed certain parts of the 1990 Act and replaced the Structure and Local Plans with Regional Spatial Strategies (RSS) and the UDPs with Local Development Frameworks (LDF) (Great Britain, 2004b). The 2004 Act was supported by a series of Planning Policy Statements (PPS) which replaced the PPGs. There was a duty on each Council to produce a series of local development documents which contained the planning policies for the district, forming the LDF. The intent was for each LDF to be flexible to account for specific local area considerations, while complying with the national objectives as set out in the PPSs. Planning applications, which are made to local planning authorities, were decided in line with the local LDF. The key considerations for an application was whether the proposal would unacceptably affect amenities and the existing use of land and buildings which ought to be protected in the public interest (DCLG, 2013b).

Two PPSs provided the national policy context for the thermal improvement of conservation buildings. The 2005 PPS1 *Delivering Sustainable Development* stated that sustainable development was the core principle underpinning planning (ODPM, 2005). In 2007, a supplement to PPS1 was published *Planning and Climate Change*. It set out how planning should contribute to reducing emissions and stabilising climate change and stated that tackling climate change was a key Government priority for the planning system stating, 'The Government believes that climate change is the greatest long-term challenge facing the world today. Addressing climate change is therefore the Government's principal concern for sustainable development' (DCLG, 2007).

The 2010 PPS5 *Planning for the Historic Environment* was supported by a 55-page practice guide endorsed by Government and EH and provided guidance on specific policies relating to heritage stock. PPS5 Policy HE1 'Heritage Assets and Climate Change' instructed local authorities that:

> *Local planning authorities should identify opportunities to mitigate, and adapt to, the effects of climate change when devising policies and making decisions relating to heritage assets by seeking the reuse and, where appropriate, the modification of heritage assets so as to reduce carbon emissions and secure sustainable development.*

In the next section it continued:

> *Where proposals that are promoted for their contribution to mitigating climate change have a potentially negative effect on heritage assets, local planning authorities should, prior to determination, and ideally during pre-*

> *application discussions, help the applicant to identify feasible solutions that deliver similar climate change mitigation but with less or no harm to the significance of the heritage asset and its setting.*

The section ended with the instruction that:

> *Where conflict between climate change objectives and the conservation of heritage assets is unavoidable, the public benefit of mitigating the effects of climate change should be weighed against any harm to the significance of heritage assets in accordance with the development management principles in this PPS and national planning policy on climate change.* (DCLG, 2010)

The practice guide to PPS5 advised local authorities to keep abreast of up-to-date information on the efficiency and sustainability of historic buildings and the best means of improving their performance. It encouraged, though did not require, the consideration of whole-life costs of any new scheme or proposed alterations, prioritising retention and re-use over demolition. The guide suggested that local authorities may find it useful to:

- produce supplementary planning documents that set out ways in which heritage assets in their area can be modified to improve their environmental performance without compromising their significance;
- take account of the positive role the historic environment can play in delivering wider sustainability objectives;
- adopt award schemes and a best practice monitoring review; and,
- consider producing appraisals of any assets at risk to highlight trends or underlying problems so as to inform policy decisions (DCLG, EH, & DCMS, 2010).

RSS's were revoked by the new coalition government in 2010 and were abolished through the *Localism Act 2011* which aimed to shift power further from central government towards communities and neighbourhoods (Great Britain, 2011b). The PPSs and related guidance were subsequently replaced by the *National Planning Policy Framework* (NPPF) in 2012. Local authorities were given one year to develop and replace LDFs with Local Plans created in accordance with the NPPF. In addition, a new level of plan, the Neighbourhood Development Plan was introduced. This gives powers to neighbourhood forums and parish councils to establish their own policies for development and use of land in a neighbourhood (Cave et al., 2013).

The NPPF replaced PPS1 and PPS5, however, the practice guide to PPS5 remained a valid Government endorsed guidance document for use alongside the NPPF; even though the referencing to PPS5 policies was redundant (English Heritage, 2013). It also provided

guidance to local councils on drawing up local plans and on making decisions on planning applications. Every area was intended to have a clear local plan which set out local people's views of how they wished their community to develop, consistent with the NPPF and against which planning applications for planning permission were judged. The key overarching policy within the NPPF was the 'presumption in favour of sustainable development' which was supported by policies that guide how the presumption should be applied. Sustainable development was described as having three broad roles: economic, social, and environmental (DCLG, 2012, 2013b).

The NPPF provides guidance about how the historic environment should be considered including the explicit statement in paragraph 9 that 'Pursuing sustainable development involves seeking positive improvements in the quality of the built, natural and historic environment'. This is supported by one of the twelve core planning principles in paragraph 17 that states that 'planning should…. conserve heritage assets in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of this and future generations'. This is further elaborated in heritage specific policies in paragraphs 126 to 141 which indicate that heritage assets should be recognised as 'an irreplaceable resource and [conserved]… in a manner appropriate to their significance'. The term conservation was defined in the NPPF glossary as the 'process of maintaining and managing change to a heritage asset in a way which sustains and, where appropriate, enhances its significance'. The term *significance* was defined as the 'value of a heritage asset to this and future generations because of its heritage interest... [which] may be archaeological, architectural, artistic or historic… [and] derives not only from …[its] physical presence, but also from its setting.' (DCLG, 2012).

Paragraph 132 of the NPPF specifically addressed changes to heritage assets stating that:

> *When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation. The more important the asset, the greater the weight should be. Significance can be harmed or lost through alteration or destruction of the heritage asset or development within its setting. As heritage assets are irreplaceable, any harm or loss should require clear and convincing justification.* (DCLG, 2012)

In paragraph 133, the NPPF stated that in these cases, consent should be refused unless it can be demonstrated that the substantial harm or loss is necessary to achieving substantial public benefits. If less than substantial harm is proposed, paragraph 134 stated that, 'this harm should be weighed against the public benefits of the proposal,

including securing its optimum viable use' (DCLG, 2012). No definition or measures are provided for the terms *harm* or *benefit*.

4.2.3 Planning permission requirements

Planning permission involves obtaining the necessary legal consents specific to the particular project or building works. Whether or not planning permission is needed for a project can be complex to determine and it is the legal responsibility of the owner of the land or property to ensure the correct permissions are obtained (English Heritage, 2013).

4.2.3.1 Permitted Development

Permitted Development (PD) rights are Parliament-granted permissions as set out in the *Town and Country Planning Order 1995* and apply to all building owners in England. PD refers to specific building work that is allowed without the need for planning permission, although compliance with Building Regulations may still be required (DCLG, 2013b). The Planning Portal provides specific information on PD for homeowners relevant to thermal improvements for: doors and windows, flats and maisonettes, insulation, and roofs. It also contains an 'interactive house' and an 'interactive terrace' which provides visual representations of building alterations and direct the user to the statutory requirements. With regard to thermal improvements, the Planning Portal permission information pages also direct users to the relevant sections of the Building Regulations (DCLG, 2013b).

For the purpose of this dissertation, it is important to note that PD can be removed through the use of an Article 4 Direction. An Article 4 Direction is made by a local planning authority to restrict PD anywhere in the authority's area, although typically used in conservation areas. Their intention is to enable an authority to control works and protect the character of areas of acknowledged importance. Where it is in effect, a planning application may be required for work that would otherwise have been PD depending on the specific requirements of the Direction (English Heritage, 2013).

For doors and windows, the Planning Portal states that planning permission is usually not required for the 'insertion of new windows and doors that are of a similar appearance to those used in the construction of the house.' However they note that planning permission may be needed if a local authority has withdrawn PD through the use of an Article 4 Direction and that for listed buildings, listed building consent would be required (DCLG, 2013b).

When a property is divided into flats or maisonettes, permission may be needed for new windows although it is not required for internal secondary glazing. The Planning Portal stresses that, 'local policy and interpretation of the rules covering changing windows in

flats varies from council to council and… [the owner is] advised to contact …[their] LPA for advice before starting work' (DCLG, 2013b).

For wall insulation, the Planning Portal recommends that 'if the building is listed or is in a conservation area you should consult your LPA'. While extensive information is provided on the thermal requirements of the Building Regulations, notice is provided that listed buildings will require permission for any changes to the wall internally or externally and that permission will be required for external cladding in Conservation Areas (DCLG, 2013b).

Although some thermal improvements to conservation properties may fall under PD, the requirement for thermal improvements to meet the requirements of the Building Regulations means that a planning conservation officer may still be asked to make decisions about the appropriateness of the works even if planning permission is not required.

Additionally, even though PD are granted at the national level, and the Planning Portal provides web-based information about what is and is not permitted, there is no national planning body for project owners to direct their questions to. Instead:

> *The Planning Portal's general advice is that you should contact your local planning authority and discuss your proposal before any work begins. They will be able to inform you of any reason why the development may not be permitted and if you need to apply for planning permission for all or part of the work.* (DCLG, 2013b)

This highlights that even though PD are national, additional information about them is provided at the local level and as noted by the Planning Portal may therefore subject to local interpretation (DCLG, 2013b).

4.2.3.2 Planning permissions

When planning permission is required, an application is made to the LPA in which the property is located. Councils offer pre-application advice, where the requirements and policies for the project in question can be discussed with a local planning officer. The officer can indicate if permission is likely to be granted or refused and why (DCLG, 2013b).

An application must respond to national and local requirements depending on the type of consents being sought. A single application for planning permission may be for a number of different consents. A list of all of the possible consents is provided in Table 4.1.

Table 4.1 : Planning Consents (DCLG, 2013b)

Consent Type	*Description*
Householder planning	Used for proposals to alter or enlarge a single house including works within the boundary/garden of a house.
Full planning	Used to make a detailed planning application for development, excluding householder developments including building, engineering, or other works in, on, over, or under land or the making of any material change in the use of any buildings.
Outline planning	Used for establishing whether the scale and nature of a proposed development would be acceptable to a local planning authority before a fully detailed proposal is put forward.
Conservation area Reserved Matters	Used for the demolition of a building in a conservation area. Where outline permission has been granted, used to make an application for the outstanding reserved matters, within 3 years.
Listed building	Used to demolish, alter, or extend a listed building in a manner which would affect its character as a building of special architectural or historic interest.
Advertisement	Used for proposals to display an advertisement which requires permission.
Lawful development certificate	Used to confirm that existing or proposed use of a building is lawful and doesn't require planning permission.
Prior notification	Used in certain cases where prior notice is required to be given to the local authority before development takes place.
Removal/variation of conditions	Used to remove or vary a condition following the grant of planning permission or listed building consent.
Approval of conditions	Used when a condition has been placed that requires details of a specified aspect of the development before development can begin.
Consent under Tree Preservation Orders	Used for works to tress subject to a Tree Preservation Order.
Notification of proposed works to trees in conservation areas	Used for works to trees in conservation areas that have a trunk diameter of more than 75mm when measured at 1.5m from the ground level.

For thermal improvements to conservation properties, depending on the project and the guidance of the local authority, householder planning consent, full planning consent, or listed building consent may be required. An LPA may grant permission subject to conditions, for example, restricting what can be done, or requiring specific approval for specified aspects of the development, such as the detailing or materials to be used (DCLG, 2013b).

Once an application is made, the local authority checks to ensure it is complete. They will then process the application including carrying out any consultations to ensure that people who may be affected by the project are aware of the application and have an opportunity to comment. Each application is given to a development control 'case' officer who assesses it against the Local Plan including any supplementary planning documents

the local authority has produced as well as against any wider applicable policies. The case officer may also consult internally with specialist officers within the local authority, for example, a conservation planning officer. The case officer, and any specialist officers consulted, will write a report recommending whether to refuse permission, grant permission with conditions, or grant permission (DCLG, 2013b).

Valid planning applications, along with the recommendations from the officers are presented to Councillors who make the final decision. Part III of the Local Government Act 2000 introduced a new ethical framework for members and employees of local authorities (Great Britain, 2000). Councillors are not required to follow the recommendations of the planning officers. There are penalties for Councillors who reject a planning application that officers have advised them to accept if it is overturned on appeal. Councillors who accept an application they have been advised to reject 'will not be overturned on appeal but Government normally brings them into line if they continue not to follow Government Guidance' (UK Parliament, 2012). Although beyond the scope of this dissertation, it is worth noting that:

> *…the relationship between local councillors and their planning officers can occasionally prove difficult. Councillors sometimes feel that officers are pressuring them to accept applications they would like to reject, through fears of being overturned on appeal. Officers… may feel that councillors have not taken sufficient account of the relevant planning policy guidance.*
>
> *Planning law says nothing about this and planning policy guidance very little. The law refers to the role of the local planning authority but does not go into detail about how these decision should be taken.* (UK Parliament, 2012)

4.2.4 Listed buildings and conservation areas

EH is involved in the process of listing buildings. Listing is an identification process whereby buildings are identified as having exceptional architectural or historic special interest. It ensures these buildings and their settings are protected by requiring consents for making any changes to that building or its' setting which might affect its' special interest. Local authorities are instructed to use listed building consent to help make decisions that balance a site's historic significance against other issues such as function, condition, or viability (English Heritage, 2013).

The older a building is, the more likely it is to be listed. All buildings built before 1700 which survive in anything like their original condition are listed, as are most of those built

up to 1840. A building usually has to be over 30 years old to be eligible for listing. Modern buildings, post 1945, must be exceptionally important or of special interest to be listed (English Heritage, 2013).

There are three levels of listing. Grade I buildings are of exceptional interest, sometimes considered to be internationally important. Only 2.5% of listed buildings are Grade I. Grade II* buildings are particularly important buildings of more than special interest and represent 5.5% of listings. Grade II buildings are nationally important and of special interest. 92% of listings are in this class and it is the most likely grade of listing for a home (English Heritage, 2013).

Protection rights are also extended to local authorities through local designation which allows for the acknowledgement of those parts of the historic environment valued by local communities. Local designation is also managed through the planning system and encompasses both individual assets, which may not be nationally listed, and areas of local character, as represented by conservation areas. The first conservation areas were designated in 1967. In 2010, there were over 8,000 conservation areas in England (English Heritage, 2013).

In the UK in 2005, there were approximately 1.2 million dwellings in conservation areas and around 300,000 individually listed residential buildings. This amounts to 5% of the housing stock (Boardman et al., 2005). However, the impact of planning protection for heritage listings in practice is more significant than the initial numbers suggest. Buildings that are adjacent to, or visible from, listed buildings or conservation areas are given additional planning scrutiny and protection for their potential impact on the *setting* of the heritage asset in question. The resulting area of impact is not possible to quantify but may be significantly larger than the actual number of heritage listings.

As part of their remit to look after the long-term interests of UK heritage assets, English Heritage has published a significant number of support and guidance documents for those who interact with, own, and manage these properties. As UK Building Regulations move towards requiring greater energy efficiency, English Heritage has produced regulatory endorsed guidance for the retrofit of heritage projects including guidance documents in relation to specific thermal envelope upgrades such as draught-proofing doors and windows, insulating roofs (of different types), insulating solid ground floors, insulating solid walls, and secondary glazing (English Heritage, 2013). In their 2010 *Energy Efficiency in Historic Buildings*, EH stated that the two biggest risks of thermal upgrade to historic buildings were causing unacceptable damage to the character and appearance of historic buildings, and causing damaging technical conflicts between existing traditional construction and changes to improve energy efficiency.

EH guidance for the building category of 'traditionally constructed buildings' is also relevant to the Building Regulations where traditionally constructed buildings are given special consideration for not meeting the Part L requirements. EH noted that traditionally constructed buildings included nearly all buildings constructed prior to 1919 as well as a significant proportion of those built before 1945; accounting for approximately 40% of the existing building stock (English Heritage, 2010).

4.3 Summary

This Chapter has examined the planning literature and key policies that affect the thermal improvement of conservation properties to better understand why it may be perceived as a barrier. It found that a key component in the application of planning is the use of *discretion* by planning officers. However, it also found that this, combined with the complex structure of English planning can lead to a disconnect between national and local planning, and a variation in the implementation of policy at the point of delivery. This Chapter has also highlighted two key issues with English planning policy for conservation properties, specifically regarding: what defines *harm* and *benefit*; and, who defines PD. The issues identified in this Chapter will be used to help structure the dissertation research.

5 METHODOLOGY

This chapter presents the primary research question and details the theoretical and practical approaches taken towards answering it. Following from the theoretical foundation, the research aim is expressed and the research objectives are presented. Finally, a key limitation of the research is discussed.

5.1 The research question

The research question is shaped in order to investigate a problem identified from a review of the literature. The research problem is stated as; barriers slow the uptake of thermal performance improvements to the existing UK building stock, which need to be addressed for UK emissions targets to be met.

The in-depth review of the existing literature in Chapter 2 and Chapter 3 identified the thermal improvement of existing buildings as an appropriate response for large-scale landlords under various UK energy scenarios up to 2050. The thermal improvement of the existing building stock was found to be slow, with the largest potential improvement to be gained through improving the thermal performance of solid wall properties, many of which are historic in nature. Barriers to the improvement of the existing building stock were examined, and the conflict in the planning system between thermal envelope improvements and conservation policy was identified as a commonly assumed barrier. Further review of planning literature a policy was presented in Chapter 4. However, no research was identified which specifically and explicitly examined the perception of planning as a barrier to thermal improvements, presenting a gap in the existing literature. This led to the development of the first half of the primary research question, '**Why is planning perceived as a barrier to the thermal improvement of conservation properties?**'.

While planning as a barrier is widely assumed, it is not well understood, and therefore is difficult to address. As this research was initiated through an academic-industrial partnership, there was a desire to enable the research to be applied towards the research problem, while maintaining strict academic rigour. This led to the second half of the primary research question, '**And how can it be addressed?**'.

5.2 Theoretical positioning of the dissertation

The dissertation approach to the research question took a pragmatic *worldview*. Creswell defined a worldview as encompassing the ontology and epistemology of the research and as providing a general orientation about the world and the nature of research that the researcher holds. He defined four possible worldviews: postpositivism, constructivism, advocacy/participatory, and pragmatism (Creswell, 2003). Morgan suggested that pragmatism rejects the traditional top-down approach to ontological assumptions and metaphysical paradigms; instead prioritising issues related to the research itself as the principal 'line of action'. He suggested that in pragmatist research, relevant methodologies and epistemologies should be determined by the issues in the research design, rather than the other way around (Morgan, 2007).

There are a number of versions of pragmatism, but most can be identified by their interest in meanings and consequences that arise from actions and situations as opposed to a search for descriptions, theories, explanations, and narratives as from the constructivist worldview or antecedent conditions as from the postpositivist worldview (Cherryholmes, 1992; Creswell, 2003; Giacobbi Jr, Poczwardowski, & Hager, 2005; Kivinen & Piiroinen, 2004). In particular pragmatic social scientists are interested in sorting out how certain human activities preceded by other human activities together result in the consequences, typically not planned or intended by anyone, that they do (Kivinen & Piiroinen, 2004). Morgan notes that, 'it is not the abstract pursuit of knowledge through "inquiry" that is central to a pragmatic approach, but rather the attempt to gain knowledge in the pursuit of desired ends' (Morgan, 2007). Pragmatic researchers agree that they are always historically and socially situated and can never be sure if they are reading the world, as from a scientific realist position, or themselves (Cherryholmes, 1992). They are not interested in total agreement with complete objectivity to find ultimate truths but rather are interested in practical levels of truth within communities for specific contexts (James, 1995). This is based on the fundamental pragmatist concept that:

> *Research questions are not inherently "important," and methods are not automatically "appropriate". Instead, it is we ourselves who make the choices about what is important and what is appropriate, and those choices*

> *inevitably involve aspects of our personal history, social background, and cultural assumptions.* (Morgan, 2007)

This makes pragmatic research particularly interested in science, knowledge construction, and the practical concerns of people, requiring deliberations about the use and benefits of knowledge at a particular time or place. In this way, pragmatic knowledge claims may be supported through the weight of evidence available and logical arguments used to apply those claims contextually (Giacobbi Jr et al., 2005). This does not suggest that pragmatists reject universal or generalised knowledge, or believe all knowledge is unique and context-dependent (Morgan, 2007). Instead pragmatists understand truth as a diversity of knowledge that works and is true at the time (Creswell, 2003).

A pragmatic position was considered appropriate for this dissertation as the aim of the research was to provide a solution to the problem of planning being perceived as a barrier. Based on this approach, the research sought to better understand the issues by asking 'Why?' to the consequence evidenced by the literature, 'Planning is perceived as a barrier to the thermal improvement of conservation properties.' This was done to focus on, and articulate, a specific solution: 'How can it be addressed?'. The two-part nature of the question suggested a mixed-methods approach that was also supported by a pragmatic worldview. The research is contextually dependent, focusing on properties in England and on the English planning system as a barrier to the thermal improvement of conservation properties, under a political context of national GHG emission reduction targets. As there were many actors involved in various aspects of the context, no absolute unity of view or opinion was assumed or sought. Instead, the pragmatic approach suggested embracing the multi-perspective environment and using it to focus on building holistic contextual evidence in order to try to find solutions.

5.3 Research strategy and development

Pragmatism as a research theory provides a philosophical underpinning for a mixed methods study by encouraging the collection of different worldviews and assumptions, and by embracing different forms of data collection and analysis (Creswell, 2003). Pragmatism enables a researcher to be flexible in their investigative techniques, as they attempt to address a range of research questions that arise (Onwuegbuzie & Leech, 2005). From a pragmatic research position, Onwuegbuzie and Teddlie redefine the traditional view of mixed methods research as being a combination of quantitative and qualitative work to being a process of *exploratory* and *confirmatory* methods. They suggest that this reconceptualization unites the data collected and the analytical procedures under the same framework (Onwuegbuzie & Teddlie, 2003). This enables the goal of understanding

phenomena systematically and coherently without being polarised by the purism of quantitative or qualitative doctrines, through the incorporation of the strengths of both methodologies (Onwuegbuzie & Leech, 2005). This redefinition aligned well with the research question. The first half of the question, 'Why is planning perceived as a barrier to the thermal improvement of conservation properties?' was identified as exploratory; where reasons were evidenced through data collection. The second half of the question, 'And how can it be addressed?' was identified as confirmatory; by validating the findings from the first half in order to develop specific recommendations to address them.

This definition is also supported by the idea that pragmatic research uses *abductive* reasoning that 'moves back and forth between induction and deduction' (Morgan, 2007) by furthering a process of inquiry that evaluates the results of prior inductions through the ability to predict the workability of future lines of behaviour. This is best understood in a sequential mixed methods approach where the results from an inductive approach can serve as inputs into a deductive approach and vice versa, though it is not limited to this context (Morgan, 2007).

The research was guided by the *abductive* approach which moved back and forth between exploratory work and deductive work, resulting in a series of sub-research questions. An illustration of the research design of the dissertation, structured by the research sub-questions was presented in Figure 1.1.

5.4 Research Methods

The dissertation research uses a number of different research methods to collect data for the different stages of the research. This includes the use of social science techniques including surveys, qualitative open-ended surveys, and qualitative interviews; as well as the use of sitemapping and the development of a Comparative Information Quality Assessment. Full details of each method, a discussion of the selection process and appropriateness for each method, and the limitations of the selected methods, are provided at the beginning of the presentation of each individual phase of the research work.

5.5 Research aims and objectives

The aim of this research is to examine a perceived barrier to the thermal performance of existing solid-wall properties in the UK, in order to help meet the UK 2050 emission reduction target. It does so by investigating an identified knowledge gap regarding the planning system as a perceived barrier to improvement.

The research approached this aim through four key objectives:

- Clarify who uses planning and how they interact with it.
- Develop an evidence base from the different users' perspectives for why planning is perceived as a barrier.
- Verify the users' perspective of why planning is perceived as a barrier through a complementary investigation to confirm the identified reason for the barrier.
- Compare the users' perspectives and the barrier evidence to identify ways to address it.

5.6 Energy efficiency in the built environment as a wicked problem

This dissertation focuses on one particular element of energy efficiency in the built environment in order to better understand, and therefore better address it. It does not however suggest that addressing the planning barrier will solve the problem of low or slow thermal improvements to existing buildings. Neither does it suggest that addressing thermal improvements will solve the energy efficiency problem, which is large, complex, and fluid (CfSD, 2012a).

Rittel and Webber originated the term *wicked problem* to describe a problem that is difficult to define, contradictory and mutable, and cannot be solved by the 'classical paradigm of science and engineering' (Rittel & Webber, 1973). Although Rittel and Webber's seminal work of the theoretical development of the term wicked problem was based in policy theory, it has since been used to describe many economic, environmental, and political issues. Conklin examined the qualities of wicked problems and generalised them to be appropriate to areas other than planning and policy. Refining Rittel and Webber's original definition, Conklin described wicked problems as having the following characteristics (Conklin, 2005):

- The problem is not understood until after the formulation of a solution.
- Wicked problems have no stopping rule.
- Solutions to wicked problems are not right or wrong.
- Every wicked problem is essentially novel and unique.
- Every solution to a wicked problem is a 'one shot operation'.
- Wicked problems have no given alternative solutions.

As applied to this dissertation, research into, and actions to improve, energy efficiency in the built environment tends to throw up new questions and new problems, continuously redefining the understanding of the issue. Additionally, there is no agreed quantitative end state where the energy efficiency problem is 'solved'. Consequently, changes to energy efficiency tend to be viewed as better or worse, not right or wrong. There is also no comparable problem that the challenge of energy efficiency in the built environment can be easily compared to. Every time improvements are made or setbacks occur, the nature of the problem changes; and the new landscape must be surveyed in order to formulate new solutions.

For the purpose of this dissertation, it is important to acknowledge that there are multitudes of overlapping and interconnected issues that result in energy efficiency. The built environment is enacted upon by a wide diversity of stakeholders from many different disciplines who often have different priorities and agendas. It is difficult, if not impossible, to isolate a single issue without unintentionally involving one or more others (CfSD, 2012a). Encouragingly however, Rittel and Webber state that although wicked problems are challenging and difficult, some resolution is possible through a holistic perspective (Rittel & Webber, 1973).

This dissertation, by the nature of its subject and the necessity of its research design, looks exclusively at one small component of the wider built environment energy efficiency problem. It has been written with the understanding that it sits within a larger *wicked problem*. The author acknowledges that attempting to address any one individual barrier will not 'solve' energy efficiency, and may create new complexities due to the nature of the problem. However, this is contrasted by the understanding that every component is important in contributing to the wider holistic view and knowledge base. The overarching aim of this work is therefore to help move the energy efficiency problem towards a 'better' position and to provide researchers and stakeholders with a slightly clearer view.

6 METHODS FOR INVESTIGATING THE USERS' PERSPECTIVE

This Chapter explains how the research was developed in order to investigate the users' perspective. This includes the identification of the two key user groups and descriptions of the different methods used to investigate them. Chapters 7, 8, and 9 present and discuss the results and conclusions from this work.

6.1 Identifying the users

Two key groups were identified in relation to planning applications for the thermal improvement of conservation properties; those who use planning to submit planning applications, and those who use planning to assess these applications.

Those who submit applications ('the applicants') typically engage with and use planning when they are undertaking a specific project. A project will have unique goals that shape its development, but must also comply with planning requirements. The applicant population includes built environment practitioners and building owners. There is a broad range of knowledge and experience within this population. Built environment professionals may have substantial experience with multiple projects, and may be very familiar with the planning regime. However, individual building owners may not be built environment professionals and these applicants may have limited experience with and knowledge of planning. In all cases applicants must balance their desires for the building outputs against what is required and allowed through the legislative process.

Those who assess applications ('the assessors') are employed by a LPA as 'planning officers' to specifically assess aspects of planning applications. They have higher

education and professional training in planning and often have significant knowledge and expertise. Assessors may include a diverse range of planning officers such as case officers, conservation officers, or urban design officers, amongst others. Assessors are tasked with ensuring that projects that are put forward meet the different standards and obligations set forth by the planning regime. However, as noted in the planning literature, they 'face various types of conflict, uncertainty, and ambiguity… [that can] result in substantial variation in the implementation of policy at the point of delivery' (Catney & Henneberry, 2012).

The research sought to obtain the perspectives of the users of planning by investigating the perspectives of both applicants and assessors. Because they are different, the methods for data collection were different for each group. However, this was done in a way to allow the comparison of their perspectives once obtained.

6.2 Development of the research method for the applicant perspective

An introduction to the applicant perspective is presented through an observed case study that was carried out by the research funding partner, Grosvenor.

The applicant population for this research was defined as all industry practitioners and building owners who had been involved in the submission of a planning application for the improvement of a conservation property in England. As such, it was not possible to quantify the population size as there was no feasible way to determine how many planning applications there have been in the past, or how many individuals were involved in each project. Therefore, the applicant population was found to be large, diverse and non-quantifiable. To try to address this issue, as well as to reach as many individuals as possible, a cross-sectional survey was selected as the primary method for investigating the applicants' perspective with follow-up interviews being conducted with self-selected survey participants.

A benefit of this approach was that different individuals who may have been involved with the same project would be able to their opinions. A limitation to this approach was that a shared opinion or experience on a particular project might be overrepresented in the sample and bias the results.

6.2.1 Case study participant observation

Participant observation is a principal approach to providing a descriptive study (Dawson, 2009). Some benefits include: the researcher having first-hand experience with the study subject; the ability to record information as it occurs; and, the opportunity to notice

unusual aspects (Creswell, 2003). While the project selected is in many ways unique, it provides an opportunity to present an example of how planning affects the energy efficient improvement of a conservation property, and why planning may be perceived as a barrier.

In 2009, Grosvenor decided to undertake a test project at 119 Ebury Street with a number of key aims:

- to investigate the effectiveness of new sustainable technologies for retrofitting historic buildings;
- to engage and work collaboratively with Westminster City Council and English Heritage to clarify the planning constraints on the sustainable refurbishment of a listed buildling;
- to achieve an 'exemplar' sustainable retrofit project that met the Government's 2050 80% emission reduction target;
- to engage with end-users to understand how to motivate them to choose to live in a sustainable property;
- to assess the relationship between cost and value of implementing sustainable initiatives; and,
- to undertake a two year post occupancy monitoring programme to be benchmarked against a standard refurbishment of a similar property at 125 Ebury Street.

The author, as part of the EPSRC CASE was embedded within the design team as a part of the client. The author was known and identified as a researcher to the project team and during any interactions with external stakeholders (Bryman, 2012; Creswell, 2003). The author attended almost project all meetings from 2010 to 2012 and was involved in the design team selection and project design development. From 2013-2014, the author kept in touch with the design team and received updates on the project but did not attend meetings. For the meetings attended, detailed notes were taken by the author as a record (Bryman, 2012). To verify and check the reliability of the author's notes, access to the other design team participants and their recorded project data including meeting minutes, notes, drawings, applications, publications, and correspondence was also available (Bryman, 2012; Creswell, 2003).

Some members of the project team were involved in other components of this research which allowed them to express their individual views. Since the rest of the research on applicants is focused on their individual perspectives, this component of the research is

conceived as the story of the journey of a single project, comprised of numerous individuals. The case study is therefore presented as a descriptive timeline of how the project progressed with respect to achieving planning permission. This includes: a description of the project; how the LPA and statutory stakeholders were engaged by the project team; how the perception of and engagement with planning shaped the design development; a description of the application process; and, a discussion of some of the implications of the project development timeline and final planning decision.

6.2.2 Survey question development

The survey questions were developed based on the barriers literature discussed in Section 3.3. In particular, questions were developed to examine the many possible sub-barriers that were identified as potential reasons for planning being perceived as a barrier. As the population was known to be complex, survey questions were also developed to better understand the sample that participated in the survey. This included asking about their individual background and experience with conservation improvement projects as well as asking questions regarding general knowledge about energy use and the built environment. The developed survey questions were primarily quantitative, supplemented by qualitative open-ended questions used to enhance the understanding of some of the quantitative responses. They were grouped into seven sections. The full survey can be found in Appendix A.

The first question of the survey was used to sort the applicant respondents into three categories: industry practitioner, building owner, or academic researcher. If an applicant fell into more than one category, they were asked to select the role they had assumed most frequently with regard to retrofit projects. The subsequent first section of questions were specific to these categories. All applicants were asked about the conservation retrofit projects they had been involved in, and if minimum standards for energy efficiency or for improving the thermal performance of the building envelope had specifically been part of them. In addition, industry practitioners were asked questions about their role within their company, their company's role within the retrofit projects they had been involved with, and their company's position on energy efficiency improvements. Academic researchers were asked about the nature of their involvement in retrofit projects.

The second set of questions included four questions specifically about the use of energy in buildings. The aim of these questions was to gain information about how knowledgeable the applicants were with regard to energy issues in the built environment. They were instructed not to look up the answers if they did not know and rather, select their best possible guess. These questions were included to allow for investigation of how

knowledge and beliefs about energy use in buildings did or did not impact opinions on energy use improvements in buildings.

To better understand how the applicants have interacted with the planning system and what documents they may have used, the third set of questions asked about their knowledge and experience with specific planning policies, and about conservation terminology. They were asked if they had ever used specific planning and planning-related documents. They were also asked a general question about what they thought the priority for UK planning was, and what they thought the priority should be.

The fourth set of questions asked applicants to rate their level of agreement on 21 statements regarding planning for conservation retrofit projects. The aim was to collect subjective data on their opinions, feelings, and beliefs regarding specific planning issues that were drawn from the literature and preliminary research. The questions used a 7-point rating scale, represented by the far left option as 'strongly disagree', by the far right option as 'strongly agree', and with the middle option being 'neither agree nor disagree/unsure'. A 7-point scale was selected to allow for strength of opinion measurement while minimising *end aversion bias* (Choi & Pak, 2005), allowing for two steps on either side of the neutral centre and before the end. The statements were divided into three general groupings: statements about planning policy, statements about the planning application process, and statements about planning officers. Although the initial statement development was balanced per grouping, during the testing and piloting phase, the unfavourable statements were criticised by a number of testers for being leading. Therefore, the decision was made that all of the statements should be favourable. While favourable statements eliminated leading in one direction, it created the possibility for *acquiescence bias* where respondents may be prone to agreeing with positive assertions (Johns, 2010). However, by placing the negative position on the left side of the scale, this could generate *left-side bias* (H. H. Friedman & Amoo, 1999; Sauro, 2010), increasing the likelihood of negative responses; or possibly counteracting any *acquiescence bias*. For these reasons, and because the statements attempted to address a broad range of issues within each grouping category, each statement was considered unique and independent; and was not intended as part of a multiple-item measure, such as a Likert scale. Each group of statements was followed by an optional text-box question, which allowed respondents to elaborate on any of their answers.

The fifth set of questions were optional and provided an open-ended format for applicants to identify which legislation or guidance documents they felt were the most useful or significant for improving the energy efficiency of existing buildings while maintaining

cultural heritage. It also asked them to suggest any policy or guidance that did not exist but that they felt would help to deliver this objective.

The sixth set of questions was also optional, and gave applicants an open format to discuss either a positive or negative experience they had had with planning on the energy efficiency improvement of a conservation property. The aim of these questions was to provide an opportunity for additional issues regarding planning to be raised, that may not have been addressed through the previous questions.

The seventh and final set of questions asked two demographic questions on applicant age group and gender. This page also included opportunities for applicants to indicate if they would like further information about the research, to be involved in future work as part of the research, or to be entered in the prize draw for taking the survey; the ethical handling of which is discussed below in Section 6.5.

6.2.3 Follow-up interviews of applicant survey-takers

Q43 and Q44 of the applicant survey asked participants to share a brief example of a positive and negative experience they had had with planning for a conservation affected retrofit project. This was done to try to better understand the actual impact that planning may have on conservation retrofit projects. Both of these questions were open-ended and optional. To get further information on this issue, Q47 asked applicants if they would be interested in sharing a more detailed story about a conservation retrofit project that they had been involved in and their experience with planning. Effort was made to be non-biased by not indicating whether the experience to be shared was positive or negative. Forty survey takers indicated they would be interested in sharing a more detailed story of their experience and follow-up semi-structured interviews were able to be arranged with ten of them. The questions used for the semi-structured interviews expanded on understanding the impact of planning on the project and the participants and can be found in Appendix B.

6.2.4 Survey sample and distribution

The survey was developed, tested, piloted, and distributed using the online survey website *SurveyMonkey*. The survey went live on the 21st of June, 2012 and ran for seven months, closing on the 31st of January, 2013.

The sample selection was done using a generic purposive sampling approach followed by a snowball sample method (Bryman, 2012). The initial survey distribution was to a diverse range of personal built environment contacts of the researcher who had experience of working on conservation projects. These contacts included architects,

property developers and managers, sustainability consultants, heritage consultants, engineers, and private building owners.

As there was no identified sampling frame for the survey population, a snowball sample method was selected as appropriate for further distribution of the survey (Bryman, 2012). Although, Bryman notes that snowball sampling is particularly appropriate for qualitative research as the resulting sample is unlikely to be representative of the population; he also indicates that it may be used in survey research 'when probability sampling is more or less impossible' (Bryman, 2012). The first-level contacts were asked to distribute the survey to any additional contacts they knew who fit the criteria of having worked on a conservation project. Further invitations were posted to relevant industry web forums and organisations which were in some way involved with the improvement of conservation buildings.

Through these first and second-level contacts, and targeted invitations, an electronic invitation to the survey was sent to over 300 known individuals. 186 individuals began the survey, out of which there were 116 valid responses. A response was considered valid if it was completed up to Q39, as the remaining questions were optional. The maximum possible response rate was therefore 39%, but may have been less, due to the unknown number of final invitation recipients.

6.3 Development of the research method for the assessor perspective

Unlike the applicant population, the assessor population is smaller and less diverse. As the research was specifically focused on conservation properties, the population for study was narrowed to planning conservation officers. This was because they specifically make decisions on the appropriateness of thermal improvements to conservation properties.

Different methods of data collection were considered concerning how to obtain and identify the perspectives of planning conservation officers. Anecdotal evidence suggested that officers had limited time, and that an electronic survey may not get a significant number of responses. To address this, a semi-structured interview approach was chosen to ensure a robust response from a smaller sample based on the premise that a higher response rate could be gained from individual face-to-face contact.

However, there was some concern that the results from the interviews would be too different from the results of the applicant survey to form meaningful and valid comparisons. Therefore, to complement the interviews and to allow for better comparison with the applicants, an assessor survey was also developed to enhance the

interviews. The applicant survey combined elements of the conservation officer interviews with questions from the applicant survey. For the assessor survey, the population was identified as all officers who had been involved in the assessment of a planning application, or building regulations consent, for the improvement of a conservation property.

6.3.1 Semi-structured interview question development

Similar to the applicant survey question development, the themes for the interview questions were drawn from the literature discussed in Section 3.3. The semi-structured interviews consisted of 25 questions across the following five topics:

- interviewee background and general LPA statistical information;
- energy efficiency in the Council and city;
- conservation and energy efficiency;
- energy efficiency in the city; and,
- guidance and legislation.

The questions and the interview structure were peer-reviewed by researchers at the Centre for Sustainable Development and adjusted for relevance, clarity, and objectivity. The final interview questions can be found in Appendix C.

The first section of four questions asked for information about the professional experience and backgrounds of the interviewees including their specific position within their LPA, the number of years they had been in post, the number of years in total they had been working in the built environment, and the type of educational training they had. The intention of these questions was to provide some context for better understanding of the interviewees' perspectives.

The second section of five questions was intended to provide data regarding the LPA. This included asking about the total number of planning officers and planning conservation officers, the total number of planning applications assessed per year, and the percentage of those referred to conservation. Interviewees were also asked specifically about the criteria used by case officers to refer an application to a conservation officer. The intention of these questions was to better quantify conservation applications and the resources available to them.

The third section had seven questions and asked the interviewees for their perspective on wider energy issues in their Council and London. This included asking if they felt energy efficiency, or emission reduction, was a priority for the Borough, and why they held that

opinion. The questions then focussed specifically on buildings, asking the interviewees how substantial they felt building emissions were for their Borough, what aspects or properties of buildings they thought had the biggest impact on energy use and emissions, and if there were any specific policies promoted by the Borough for reducing energy use or emissions from buildings. The intention was to gain insight into how well officers were informed about the energy use within their Borough. The question did so by asking about the ways in which each Local Authority was or was not conveying the significance, or addressing, the energy emissions attributed to the built environment. Additionally, a question on the attributes of buildings that contribute to emissions sought to investigate the individual knowledge and awareness of built environment emissions of the interviewees. Two additional questions sought to gain information about the amount of awareness and knowledge transfer between Councils with respect to the thermal improvement of conservation properties.

The fourth section had four interview questions and focussed on energy use, emissions, and conservation properties. Specifically, officers were asked how they felt about the amount of attention given to the energy efficient improvement of conservation properties, and how they thought their Borough was performing in terms of improving the energy efficiency of conservation properties. The intention of these questions was to gain insight into whether the interviewees felt that the thermal improvement of conservation properties was important to undertake. They were then asked to discuss at least two local examples of an energy efficient retrofit of a conservation property; one that they thought was a good example, and one they thought was bad. The intention of these questions was to gain insight into what local case studies might be available to officers, and to better understand their perspectives of *good* and *bad* energy efficient retrofits of conservation properties. Finally, they were asked about their views on specific thermal envelope improvements to: windows; solid walls; roofs; and, the ground, for: listed buildings; buildings in conservation areas; and, buildings that were traditionally constructed. The intention of these questions was to get very detailed information on the problems or concerns associated with the thermal improvement of conservation properties as well as to gain insight into allowed, promoted, or suggested improvements to the thermal envelope of conservation properties.

The fifth and final section of the interviews had five questions that looked specifically at the policy and guidance that the interviewees used in order to make and inform their decisions regarding the thermal improvement of conservation properties. In addition to asking what policies and resources the officers used, they were also asked their opinion of the quality of the policy and guidance, if they felt they were sufficient for making good

decisions, and if there were any additional policy or guidance they would like to have. Officers were also asked about how they felt the change to the national planning system would affect their ability to make good decisions, or had affected their ability to make good decisions. It is relevant to note that the change to national planning policy discussed in Section 4.2.2 took place during the schedule of interviews. The intention of this section was to understand how policy and guidance affects the decision making process, and to gain insight into whether or not those who use the available policy and guidance felt they were sufficient for their purposes. Asking about the perceived impact, or actual impact, of the change to the planning system sought to gain perspectives about how national policy affected local decision-making. The intention of asking interviewees what policy measures or guidance they would like to have was to identify where existing policy and guidance could be improved for those who rely on them for decision-making.

6.3.2 Semi-structured interview sample selection

To define the scope of the research, the Councils that make up Inner London as set out in the *London Government Act* (Great Britain, 1963) were selected. The 13 sample Councils are illustrated in Figure 6.1 and were selected based on four criteria:

- First, that they had some degree of unity, being regulated by the Greater London Authority.
- Second, that they were subject to similar growth pressures.
- Third, that they were urban; as the more urban an area, the more the contribution of building related emissions should be reflected in local agendas (K. Friedman & Cooke, 2011).
- And fourth, that they contain a reasonable proportion of heritage building stock.

Figure 6.1 : Sample Council selection

A: Camden
B: City of London
C: Greenwich
D: Hackney
E: Hammersmith and Fulham
F: Islington
G: Kensington and Chelsea
H: Lambeth
I: Lewisham
J: Southwark
K: Tower Hamlets
L: Wandsworth
M: Westminster

Using the Council designations from Figure 6.1, Table 6.1 illustrates background research on the 13 sample Councils. This was obtained in 2011 from the Council websites, direct contact with the Councils, and DECC databases. This information supported the need for building retrofit to meet emission reduction targets by quantifying the CO_2 emissions from buildings for each Council, ranging from 60-95.8% of total emissions. This calculation was made by combining the gas and electricity emissions from the 'domestic' with 'commercial and industrial' emissions categories. This means the total for buildings would be slightly less than calculated, as industrial emissions should not be included. However, it was not possible to extract industrial emissions from the data. Regardless, in Hackney, Lambeth, Lewisham, and Wandsworth, domestic emissions alone accounted for over 40% of total emissions (DECC, 2013d). Notably, the emissions attributed to buildings are substantially higher in the sample Councils compared to the national average (see Figure 2.1) due to the urban nature of the sample (K. Friedman & Cooke, 2011). Table 6.1 also illustrates the impact of conservation-affected properties, since 20-75% of the sample Councils were covered by conservation areas; and the number of listed buildings ranged from 400-11000. These factors may suggest that given the motivation for local Councils to prioritise local issues, combined with the national priority to reduce emissions, the priority and policies of the sample Councils should be particularly aligned towards the reduction of energy use in existing buildings.

Of the 13 sample Councils selected, interviews were arranged at 12 Councils and took place between September 2011 and October 2012. While the interviews were arranged with single officers, at three of the interviews, two officers attended and participated simultaneously resulting in 15 officer interviews. A list of the interview dates and a numerical assignment of Councils and interviewees used in the anonymised data analysis are shown in Appendix D.

6.3.3 Survey question development

The assessor survey consisted of six sections of questions and was developed, tested, and administered using the online tool, *SurveyMonkey*. The full survey can be found in Appendix E.

The first set of questions asked for information about the individual taking the survey and about their LPA. The aim of these questions was to complement information from the conservation officer interviews. Information about the individual was concerned with their role as an officer and the amount of experience they had. Information about the LPA included how many officers worked in planning overall, and in conservation specifically.

Table 6.1 : Background Data on Sample Councils 2012

	C-A	C-B	C-C	C-D	C-E	C-F	C-G	C-H	C-I	C-J	C-K	C-L	C-M
No. Listed Buildings	5600	600	1000	1300	500	4000	3800	2000	540	2200	2050	400	11000
No. Locally Listed	No list	No list	500	395	2000	1000	No list	140	270	1910	400	475	No list
No. Conservation Areas (CA)	39	26	20	29	45	40	35	60	27	40	58	45	56
% Council Area Covered by CA	55	37.4	20.8	24.1	51	38	70	29	20	23.3	30.4	45	75
No. World Heritage Sites	0	0	1	0	0	0	0	0	0	0	1	0	2
2008 total tons CO_2[a]	1692	1646	1233	899	1071	1205	1367	1379	1080	1672	2351	1315	3396
% CO_2 from buildings[ab]	60.8	95.8	74.5	79.2	82.4	87.1	60	79.8	74.2	83.4	86.4	78.6	89.7
% CO_2 from domestic[a]	24.8	1.3	38.9	46.8	34.7	32.9	30	42.1	51.1	29.8	16.1	48.2	14.6

[a] (DECC, 2013d)
[b] % CO2 from buildings calculated by combining electricity and gas emissions from 'domestic' and 'industry and commercial'

The second set of questions was also developed to complement the conservation officer interviews and was concerned with better understanding how energy efficiency was represented in the LPAs. Assessors were asked if they perceived that energy efficiency was a priority for their local authority, and if so, why they thought so. They were also asked about how they thought their authority was doing compared to other authorities, and about their personal knowledge of this issue in other authorities. In addition, assessors were asked about how many applications they received for energy efficiency improvements to conservation properties.

The third set of questions further explored the acceptability of specific thermal envelope improvements to both listed and conservation area properties that was examined in the conservation officer interviews. The aim of this section was to see how diverse the opinions were on available technological solutions, and to better understand what the assessors' concerns were with respect to these improvements.

The fourth set of questions replicated the rating scale statements from the applicant survey, the development of which were discussed in Section 6.2.1. One statement was removed from the set of statements regarding planning officers, 'Most of my experiences with planning officers have been positive.', as this was not considered appropriate for the assessor respondents. The rest of the statements were identical to those presented in the applicant survey. The aim of this section was to allow a direct comparison between the perspectives of those who assess, and those who apply for, planning applications.

The fifth set of questions was developed both to provide a comparison with the applicant survey, and to complement the results of the conservation officer interviews. Questions asked about which policies and guidance documents the assessors felt were the most useful for informing their decisions on these types of projects. Assessors were asked to suggest any new policy or guidance document that they felt would help to improve the energy efficiency of existing buildings while maintaining cultural heritage. In addition, assessors were asked about what external organisations they used for information. Also, they were asked if and how the change in national planning to the NPPF has affected their decision-making.

The sixth and final set of questions replicated the final set of questions from the applicant survey. There were two demographic questions asking for age group and gender. Additionally, assessors were asked if they would like: further information about the research; to be involved in future work as part of the research; or, to be entered in the prize draw for taking the survey. The ethical handling of the questions in this section is discussed Section 6.5.

6.3.4 Survey sample and distribution

The survey went live on December 1st, 2012 and collected responses for two months, closing on the 31st of January, 2013. During this time, the front page of the applicant survey was modified to provide a link for any assessor who wished to participate in the research. A list of 354 local government entities in England was collated and contact details were obtained for the relevant LPA for each, resulting in 307 unique contacts. An email invitation and link to the assessor survey was sent to each LPA with the invitation being extended to all officers who had been involved with the assessment of a planning application for a conservation property.

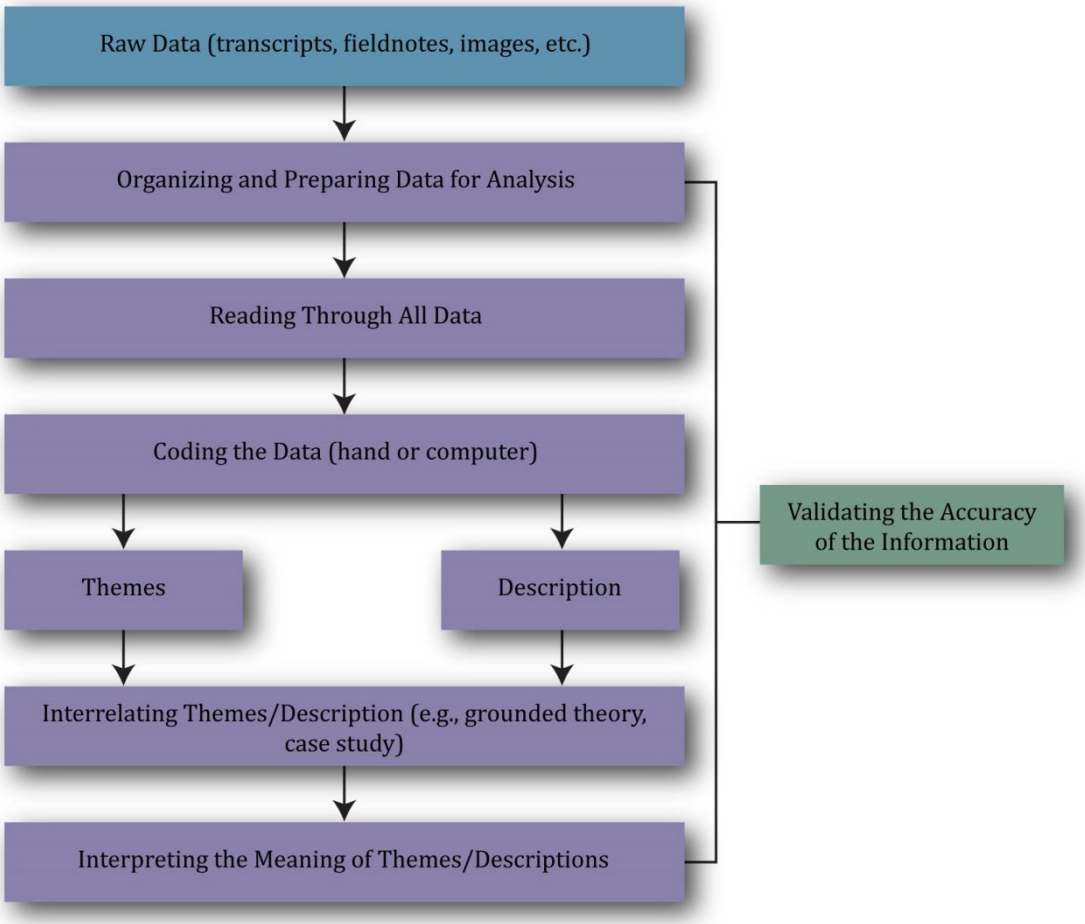
62 individuals began the survey, out of which there were 32 valid responses. This low response rate supported the initial research development premise that assessors may not be as willing to participate in an online survey. A response was considered valid if it was completed up to question 33, as the remaining questions were optional. The maximum possible response rate was therefore 10%, but may have been less due to the unknown total survey population or number of individual invitation recipients.

6.4 Data Analysis

Different methods of data analysis were used for the resultant data obtained from the methods described in this Chapter. For the applicant and assessor surveys, which had both closed and open questions, quantitative and qualitative data analysis techniques were used. Descriptive statistics were used to analyse the quantitative data from both surveys. The use of inferential statistics was not considered appropriate because neither survey was developed with a representative sample, meaning the data was not generalisable (Bryman, 2012; Gravetter & Wallnau, 2013). Depending on the specific questions and types of variables, analysis included the use of frequency distributions, bar charts, and pie charts as well as measures of central tendency and measures of dispersion (Bryman, 2012; Gravetter & Wallnau, 2013).

The open-ended qualitative survey questions, and the assessor interviews were analysed using thematic analysis and an open coding approach (Bryman, 2012; Dawson, 2009; Ryan & Bernard, 2003) using the qualitative data analysis procedure set out by Creswell (2003), show in Figure 6.2.

Figure 6.2 : Data Analysis in Qualitative Research (Creswell, 2003)



The text from the open-ended survey questions was copied into individual files and the transcribed interviews were separated into files corresponding to each question of the structured interviews. In cases where interview responses were appropriate to more than one question, the text was copied into all of the relevant question files. These files were then loaded into *QDA Miner Lite*, a qualitative data analysis software package, where they were manually coded. Themes were primarily identified through repetition across data sources, but also from the *a priori* theoretical understanding of the issues, prompted by the semi-structured interview questions (Ryan & Bernard, 2003).

Although 'there is no ultimate demonstration of validity', it can be made 'more, rather than less, likely' (Ryan & Bernard, 2003). Multiple validation strategies were used in the coding process including triangulation, the use of rich description, and the identification of negative or discrepant information (Creswell, 2003).

Three common critiques of qualitative analysis are the loss of context, fragmentation of the data (Bryman, 2012), and the impacts of researcher bias (Creswell, 2003). The previous Chapters of this dissertation provide some of the context for the data collected.

As the qualitative data was collected through semi-structured interview questions or open-ended survey questions, this helped to minimise fragmentation by providing focus for the discussions being analysed. The potential for researcher bias was acknowledged and attempted to be minimised through acknowledging that it is a component of qualitative research and by taking a reflexive approach to both conducting and analysing the data (Bryman, 2012).

6.5 Research ethics

Consideration was given to the ethical considerations of using human participants as set out in the University of Cambridge code of conduct for research ethics (University of Cambridge, 2013a, 2013b) for the surveys and interviews used in this research.

The front page of both surveys provided information on the reason and context for the survey, the funding sponsors for the research, and the criteria for participation in the survey (see Appendix A and Appendix E). Respondents self-selected their suitability for participation in the survey. Participation in the survey was non-obligatory and respondents were able to quit the survey at any point. Two optional incentive prizes of either a £50 gift certificate to the online shop 'Amazon', or a bottle of champagne, were offered to respondents to encourage participation. Respondents were also able to indicate if they would like to receive information on the findings of the survey. For these reasons, personal information was collected from certain respondents. However, identifying information questions were optional, and located on the last page of the survey. The lack of provision of this information did not restrict participation in the survey. Once the survey was closed and the prizes were awarded, a list of respondents who desired information on the findings was created, and all identifying information was deleted from the individual survey responses.

All interviewees were sent a memorandum of understanding prior to the interview (see Appendix F). All interviewees provided informed consent to be interviewed and recorded prior to the interviews. Anonymity was given to the officers interviewed and it is important to note that the order of the sample Councils given in Figure 6.1 and Table 6.1 does not correspond to the Council or officer designation numbering used in the data analysis and discussion. The interviews were transcribed and made anonymous by the interviewer. The anonymous transcriptions were then used for the research analysis, whilst identifying information was kept securely and in a separate location.

7 Perspectives of Those Who Submit Applications

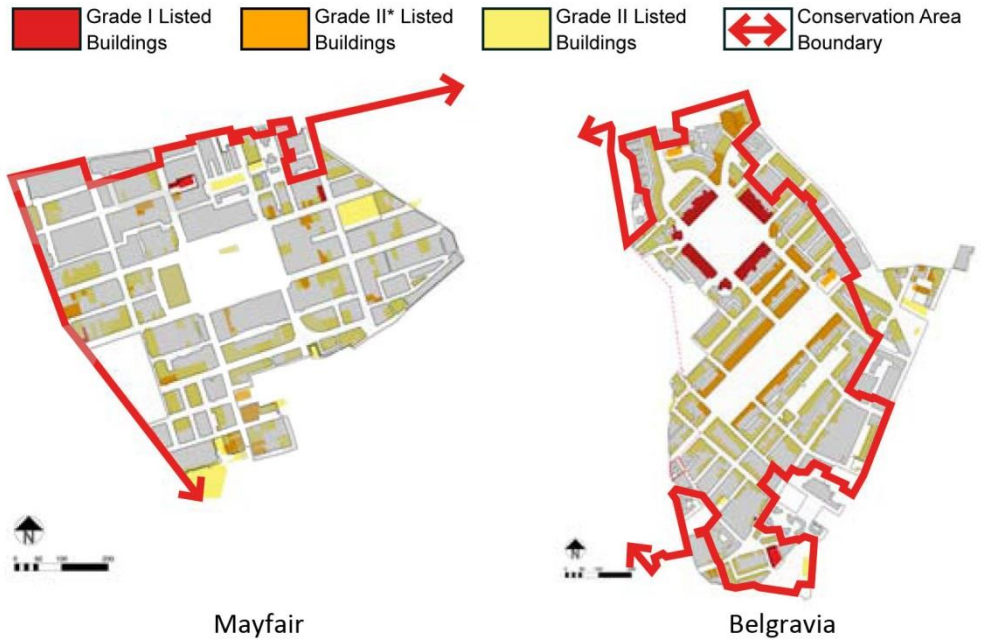
This Chapter provides research that explores the perspectives of planning applicants. First, it does so by presenting a case study of an energy efficiency retrofit project done to a Grade II listed property by the research funding partner, Grosvenor. Second, it provides details of the most relevant results of the applicant survey. The full results of the survey by question, can be found in Appendix G. Third, it presents the results of interviews and two of the open-ended questions from the survey regarding specific experiences of applicants on projects. Finally, the results of all of these sources of investigation are analysed and discussed. Subsequently, the key findings regarding the perspectives of the applicants are articulated and summarised.

7.1 An energy efficiency retrofit case study - 119 Ebury Street

Grosvenor's London estate began to take shape in the 1720s when the Grosvenor family began developing what is now known as Mayfair into a fashionable residential area centred on Grosvenor Square. In the 1820s, development began in Belgravia which is to the southwest of Mayfair. Originally 500 acres of swamp, today the London estate is 300 acres that remain in the control of the Grosvenor family through Grosvenor, a privately owned property group (Grosvenor, 2015).

Building heritage conservation is a fundamental component to the Grosvenor estate management. As illustrated in Figure 7.1, virtually the whole of their London estate is within a conservation area. In addition, the estate contains approximately 1500 listed buildings (Grosvenor, 2009, 2015).

Figure 7.1 : Conservation designations on the London estate (Grosvenor, 2009)



Based on their unique origins, Grosvenor has a long standing history of stewardship and a concern for their impact on the surrounding environment. In 2010 they started formally tracking, improving, and reporting their environmental performance. They also initiated a pilot project to bring about clearer guidance for the sustainable redevelopment of heritage properties; and, to help inform their future approach to reducing the environmental impact of their buildings whilst conserving the character of the London estate (Grosvenor, 2015).

119 Ebury Street is a Grade II listed Georgian terrace property in Belgravia. It is listed as part of a group listing including numbers 117-133 (see Figure 7.2). Originally built as a single family home, until 2010 it had recently been used as a hotel and was in a poor state (see Figure 7.3 & Figure 7.4). Grosvenor planned to bring the building back into residential use. To do this, the building was in need of a complete refurbishment. Grosvenor carries out approximately 40 refurbishments at this level per year, in addition to a large number of smaller improvement projects. They have an existing standard specification which they use to facilitate this process. 125 Ebury street, located a few doors down was also scheduled for a complete refurbishment. It was decided that 125 Ebury Street would be retrofit using the standard specification and used as a benchmark for comparison for 119 Ebury Street.

A historic building report was commissioned in February 2010 to assess the historical and architectural significance of the building and to guide and advise the proposals (Donald Insall Associates, 2012). As this was a new project type for Grosvenor, they decided to

look beyond their standard framework architects. A brief was drawn up and seven architectural firms were invited to bid for the project in February 2010. After a rigorous selection process that included submitted bid proposals and interviews, David Morley Architects was appointed as architects in May 2010. The rest of the design team was assembled by Grosvenor and included a wide range of specialists to ensure high quality design as well as appropriate development. The members of the design team are shown in Table 7.1. The author was introduced to the team as part of the Grosvenor representation.

Figure 7.2 : Ebury Street north elevation (David Morley Architects, 2012)

Figure 7.3 : 119 Ebury existing external condition (David Morley Architects, 2012)

Figure 7.4 : 119 Ebury existing internal condition (David Morley Architects, 2012)

Table 7.1 : 119 Ebury Street Design Team

Design Team Role	***Company***
Client/Owner	Grosvenor
Architect	David Morley Architects
Contract Administrator/ Quantity Surveyor	Thompson Cole Ltd
Structural Engineer	Hurst Peirce + Malcolm LLP
M & E Consultant	E.A. Pearce Consulting Engineers LLP
Planning Consultant	Gerald Eve
Historic Buildings Consultant	Donald Insall Associates
BREEAM and Energy Consultant	Eight Associates
Pre + Post-Occupancy Parametric Monitoring	Rickaby Thompson Associates Ltd
Building Energy Management	Perfect Integration Ltd

At one of the first design team meetings in July 2010 the aspirational aims that would guide the project design and development were discussed and agreed. These were to:

- investigate the effectiveness of new sustainable technologies suitable for retrofitting historic buildings;

- work collaboratively with Westminster City Council (WCC) and English Heritage to clarify the planning constraints on sustainable refurbishment of a listed building;
- engage with Grosvenor's end users to understand how they can motivate them to choose to live in a sustainable property and how they interact with the sustainable initiatives provided;
- assess the relationship between cost and value of implementing sustainable initiatives; and,
- undertake a two-year post occupancy monitoring programme benchmarked against a standard Grosvenor refurbishment (Grosvenor, 2015).

Although Grosvenor had extensive experience with the retrofit of conservation properties which were all located within the same Council, they did not have a clear understanding of what energy efficiency measures would be permitted by planning. Some of their previous projects had achieved very good standards of energy efficiency, but other project proposals had been refused during pre-application discussions. This experience of inconsistent decisions by planning authorities was shared by the other members of the design team on their various projects. There was a general understanding amongst the design team that the biggest practical problem facing this project would be obtaining planning permission. In the first project programme, additional time of four months was allowed for addressing the planning concern compared to the standard project timeline, with the project expected to start on site in March 2011.

A fundamental underlying component to the project design was assessment and analysis of the existing heritage and building performance. Identification of the special interest of 119 Ebury Street as a listed building was critical to understanding what elements needed to be conserved. The historic building report identified the primary significance of the group value of the listing along with the adjoining houses on Ebury street, stating that the group clearly forms a unitary composition consisting of a symmetrical scheme with special accents to the ends and centre of the block. The report noted that the building had suffered both from its conversion into a hotel, which resulted in the loss of much of the original plan form and many of the original features and finishes, as well as from a lack of maintenance. The staircase, door and window joinery, cornices, skirting's, and mouldings are original and of interest, but were not complete in all cases. The report found that there was no coherent original interior, and that the building was generally in a poor state with areas of rotten window joinery and inappropriate drainage arrangements amongst other issues (Donald Insall Associates, 2012).

Potential benefits to improving the heritage aspects were also identified in the heritage assessment. The primary benefit aligning with the group value listing included reinforcement of the architectural character of the group through a sensitive refurbishment of the façade. This would include: the restoration of front area railings; first floor balcony; second floor cornice; repair of the historic sash windows; remedial treatment to remove the colour stain on the brickwork; removal of the tiled finish on the entrance steps and replacement with appropriate natural stone finish; and, repairs to the front entrance door, including replacement of solid panels. With respect to the plan form, the reinstatement of the historic room sizes would be seen as beneficial, particularly to principle rooms at the front ground and first floor (Donald Insall Associates, 2012).

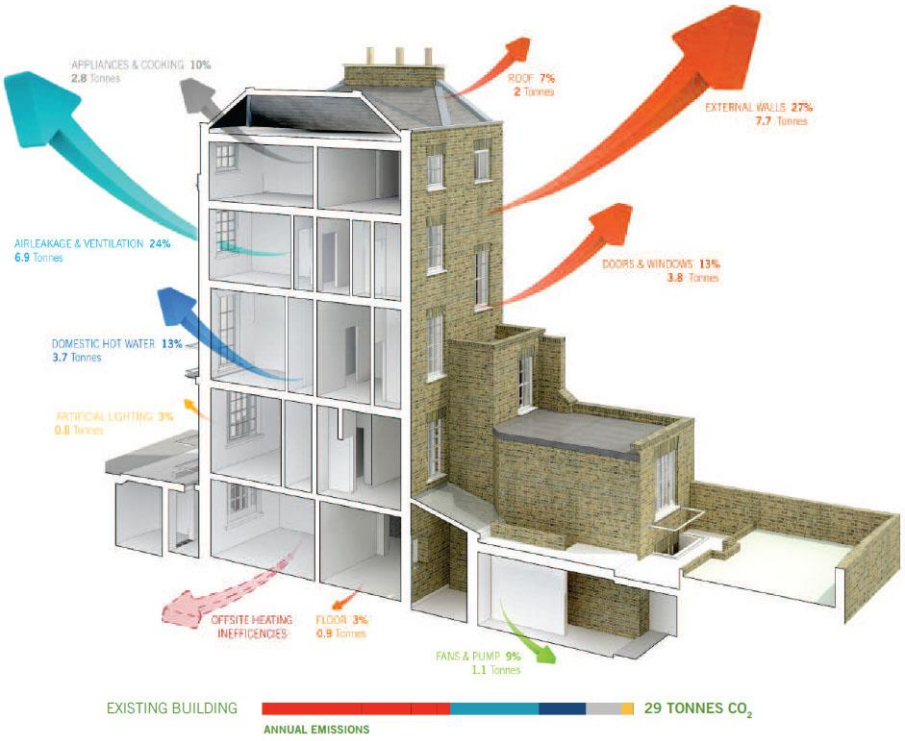
Existing building performance analysis identified both positive and negative features. Positively, the size and style of the windows provides good quality natural light to the inside spaces. In addition, the existing shutters can help reduce night time heat loss. The exposed thermal mass of the solid wall construction helps to keep the building cool in summer. Finally, although the front of the building is of significant heritage value, the rear offers more flexibility to modify allowing for the improvement of inappropriate drainage runs and to address the later additions which were of poor construction. Some of the negative attributes found were: the lack of insulation; significant air leakage; single glazing on large windows; and, inefficient utilities and related controls.

To refine the understanding of the existing building's fabric and environmental performance, an envelope air tightness test and thermal images were commissioned. During the initial design and energy use analysis, an assumed value of $15m^3/hr/m^2$ was used which is a typical value used within the industry for buildings of this type. The air tightness test carried out in September 2010 gave a result of $17.22m^3/hr/m^2$ at 50Pa. For reference, the maximum allowed value under the 2010 Building Regulations was 10 $m^3/hr/m^2$. At the same time, smoke testing was done to identify the locations of air leakage paths through the building's fabric. The testing revealed substantial air flow around the windows and at ceiling/wall and skirting board/floor junctions. Strong stack effect air flow paths were identified travelling all the way up through the house via the hollow partition walls. Thermal imaging results revealed minimal temperature differentials between the internal and external surface temperatures reflecting a lack of insulation and the construction of the wall. To the rear, the location of an uninsulated hot water tank was clearly visible on the exterior as heat seeped out through the wall. Thermal images of the windows showed severe air leakage between the sashes, and between the sash and the frame. The resulting analysis showed an annual carbon emission profile of 29 tonnes of CO_2 per year. Of that, 27% came from loss of heat through

external walls, 24% from loss of heat through air leakage and ventilation, 13% from loss of heat through inefficient doors and windows, 13% from an outdated and inefficient boiler system, and the rest from appliances and cooking, loss of heat through the roof, inefficient lighting, fans and pumps, and heat loss through the ground floor (see Figure 7.5).

Following an initial meeting held on-site in February 2010, a meeting was held on-site in August 2010 to present and discuss the initial proposals to the Council. The meeting was attended by two representatives from WCC and three representatives from the design team. The conservation officer and the Councillor leading on WCC's 'Go Green' programme[4] were also present. During the meeting, it was made clear that certain elements of the proposal would be contentious, and that at the time, WCC policy weighted conservation and preservation more favourably than sustainability. However, while acknowledging the difficulties and challenge ahead, it was also made clear that no elements of the design should be discounted at this stage in order to push WCC with respect to what might be acceptable. The WCC representatives agreed to provide further feedback on the project and proposals after discussion at their monthly team meeting.

Figure 7.5 : Analysis of existing annual emissions (David Morley Architects, 2012)



[4] 'Westminster Council's Go Green Programme sets out how the City Council is leading the way to become a more sustainable city. The aim of the programme is to re-establish Westminster as an exemplar 'green' authority. It is led by a board of top-tier managers who ensure that all … services and policies work together to create a more sustainable and liveable city.' (Westminster City Council)

In September 2010 initial unofficial feedback was received from WCC. This indicated that putting a mansard roof on the building was considered contentious and would 'require a fight'. It also indicated that the addition of a rear conservatory was contentious. Comments with respect to the windows were that they should be retained unless beyond repair. If replaced, single glazed replacement with secondary glazing was preferred. There were additional issues with putting stairs into one of the principle rooms and with the proposal for 3 residential flats instead of one family unit. Finally, it was indicated that absolutely no external insulation would be permitted. This response was not unexpected and did not deter the client or the design team, who were committed to pushing forward on the project. Proposals were further developed to address some of these comments and to continue to challenge others (David Morley Architects, 2012).

In July 2011, applications were finally submitted for Planning and Listed Building consent for the change of use, works of alteration, extension, and repair of 119 Ebury Street. This was a delay of an additional five months beyond the already extended project plan, primarily due to conservation negotiations and subsequent redesign. However, having raised the challenge to WCC through a cutting edge proposal, a challenge was issued in return by a WCC Councillor. The Councillor asked whether or not the approach could be bolder. Grosvenor was asked if they could be more ambitious in their proposals: testing further technologies suitable for historic retrofitting; and, delivering greater performance on carbon and other environmental measures. Grosvenor accepted the challenge and withdrew the application in order to re-examine the project. The design team spent a further six months researching, developing the proposals, and consulting with stakeholders. During this time, the design team agreed an additional aim for the project:

- to achieve an 'exemplar' sustainable retrofit project that aspires to meet the government's 2050 national carbon reduction target of 80%.

However, the development of the project was proving to be contentious with a range of stakeholders, primarily due to heritage concerns. It became clear during discussions that most of these stakeholders were unfamiliar with the technologies being proposed and in particular, how they looked in person. Therefore, it was agreed with WCC that a test room at 119 Ebury showcasing mock-ups of proposed initiatives along with a full presentation of the enhanced proposals would be allowed. Between January and March 2012 presentations were made to: WCC Councillors; WCC Planning & Conservation teams; WCC Go Green team; EH; The Georgian Group; and, the Victorian Society. Over 30 individuals came to view the test room and attend a presentation on the details of the enhanced project and the proposed technologies. The test-room included mock-up detailing options for use of aerogel insulation. This was contentious due to how it might affect the existing

internal fabric (see Figure 7.6). Additionally, two types of slimline glazing replacement options were presented. This was highly contentious due to a loss of original fabric. Thermal tests were done on the mock-up window visually showing the thermal performance variation between the different options (see Figure 7.7). . Detailed studies were undertaken of each existing window in the property (see Figure 7.8). These studies highlighted that only 22% of the existing window mullions were original. Three additional styles of replacement mullions were used to repair the windows over their lifetime, resulting in a complex blend of original and replacement fabric. The majority of the window mullions were Victorian and 20th Century replacements (David Morley Architects, 2012). Visitors to the test room were encouraged to look closely at these details and were provided sample glazing bars to physically examine and compare.

Figure 7.6 : 119 Ebury insulation mock-up (David Morley Architects, 2012)

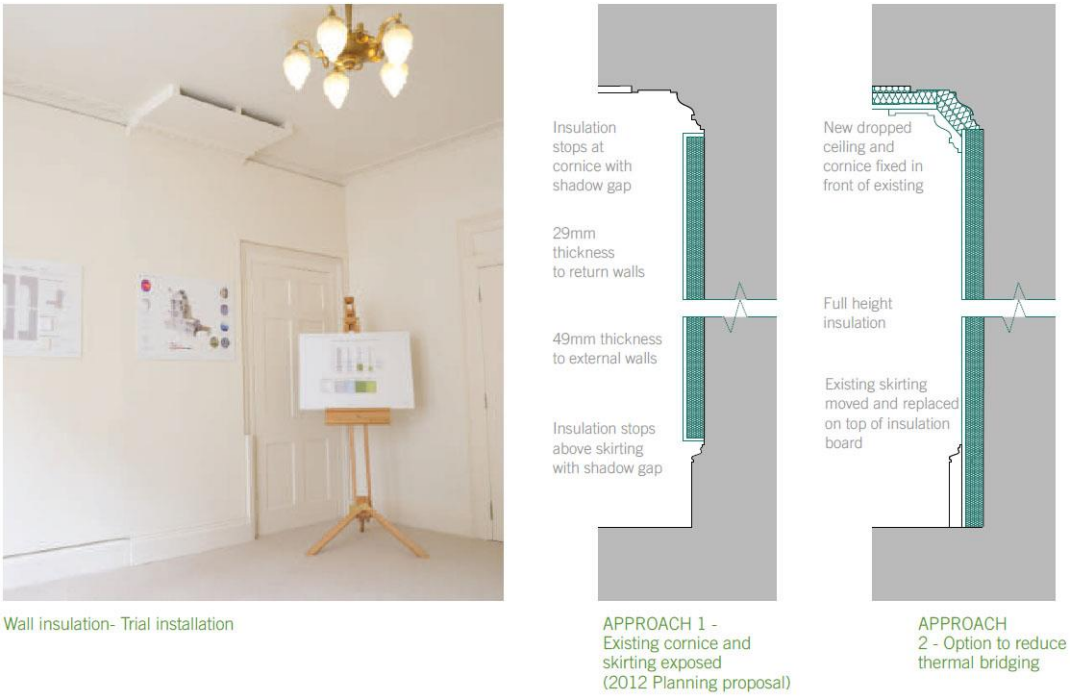
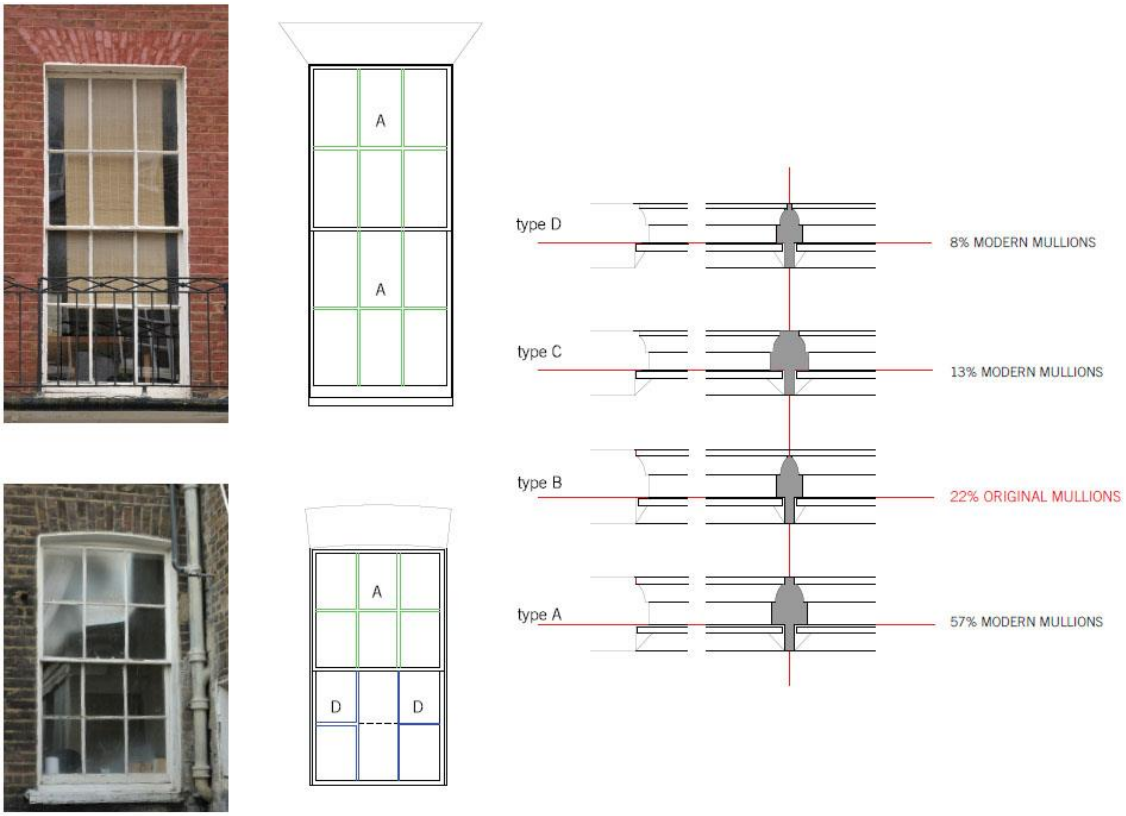


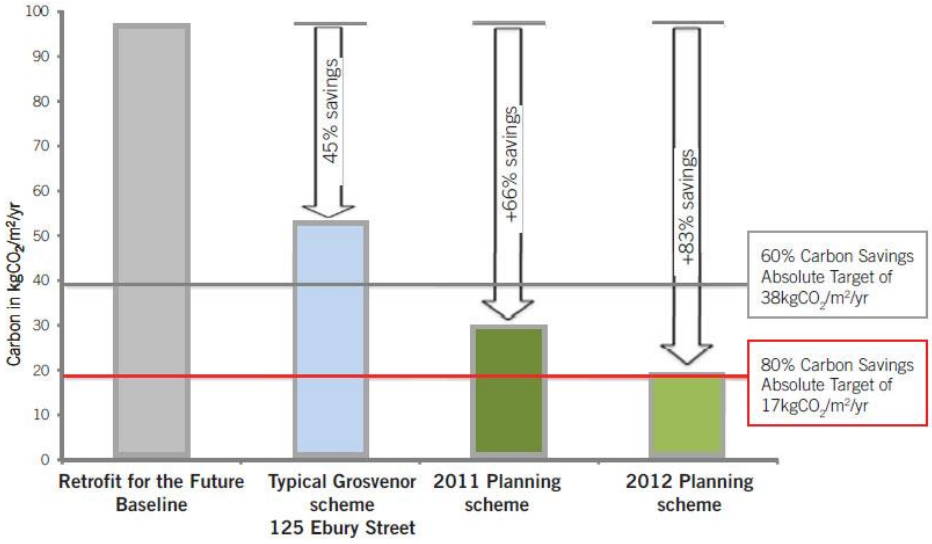
Figure 7.7 : 119 Ebury window mock-up (David Morley Architects, 2012)

Figure 7.8 : 119 Ebury window mullion survey (David Morley Architects, 2012)



Detailed information on the expected energy performance of the building was also presented (see Figure 7.9). This compared the existing performance of the building, to 125 Ebury Street, to the 2011 planning application, and finally to the enhanced 2012 proposal. The analysis showed an annual carbon emission profile of 6 tonnes of CO_2 per year. The two biggest contributors to that were appliances and cooking at 30%, and domestic hot water at 18% (see Figure 7.10). The biggest improvements came from the introduction of insulation and air tightness measures and the resulting reduction in heat loss through the walls. The main sustainable initiatives proposed in the enhanced proposal to achieve this result were: internal wall insulation; a mix of triple, vacuum, and secondary glazing; whole house ventilation with heat recovery; phase change materials; high efficiency condensing boilers; an air source heat pump; low energy lighting; rain water harvesting; grey water toilet flushing; photovoltaics; and, a fully integrated building management system.

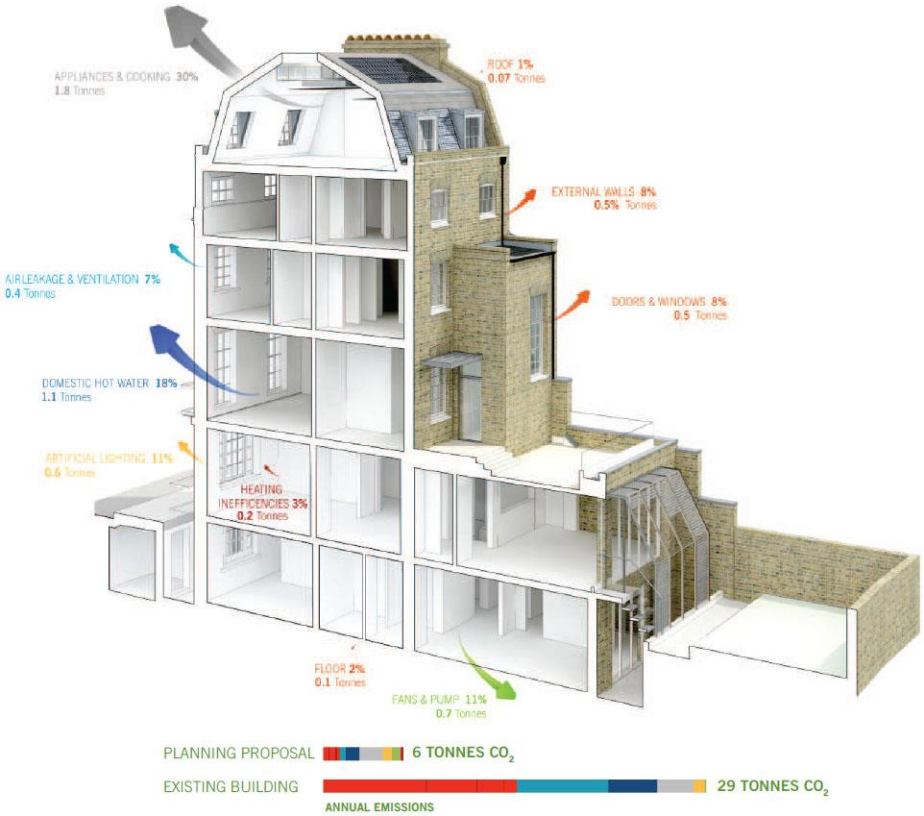
Figure 7.9 : Target rating comparisons (David Morley Architects, 2012)



TARGET RATING SCORES	1990 Baseline	Typical Grosvenor scheme - 125 Ebury St	2011 Planning scheme	2012 Planning scheme
EPC Rating	G	C	B	A
ECO HOMES	n/a	Very Good 59	Excellent 76	Excellent 88
CO_2 Emissions - $CO_2/m^2/yr$.	97 kg	53 kg	33kg	16.5kg
Renewable Savings	0%	0%	6%	36%
ADDITIONAL COST (above standard refurb)	n/a	0%	20%	30%

Comparison of typical, proposed 2011 and 2012 planning application schemes with UK Government TSB Retrofit for the Future targets

Figure 7.10: Proposed annual emission analysis (David Morley Architects, 2012)



In March 2012 Grosvenor informally learnt from WCC that both the 2011 scheme and the enhanced 2012 scheme would be recommended for refusal under conservation policy grounds concerning the appearance and character of a listed building. The main points of contention were the introduction of: the roof extension; the rear extension; double glazing; internal insulation; solar thermal panels; a *brise-soleil*[5] on the rear elevation; and alterations to the interior. The project had reached a critical stage in decision-making; Grosvenor needed to decide whether or not to submit the application.

Typically in a case where WCC has indicated an application will be refused, Grosvenor does not submit the application. They work with WCC to address the concerns and submit applications that are agreed through pre-application discussions. In this case, the project had reached an impasse. Grosvenor was committed to putting the project forward but needed to consider if pushing it forward would damage their long-term relationship with WCC. As numerous projects are undertaken annually within the borough, this was an important consideration. Discussions were held at the highest level of Grosvenor management as to how to proceed. It was decided that although contentious, this project should not impact the existing relationship with WCC and that the issues faced by the project represented the primary reasons for moving ahead with it. The enhanced application was therefore submitted in May 2012 and Grosvenor committed to continuing to promote the project and engage with WCC to bring about a positive outcome at planning committee level.

Although the enhanced application had been submitted, it was still being debated by WCC. In August 2012, a meeting was held at Grosvenor's offices between WCC, EH, and the design team. Each element of the enhanced design was discussed in detail. At this meeting certain compromises were agreed. For example, secondary glazing was to replace the proposed vacuum double glazing. The secondary glazing could be made from the vacuum glazing, but it could not replace the existing window glazing. The detail for the internal insulation was revised to finish at the cornice, skirting, and architraves shown as 'Approach 1' in Figure 7.6 instead of encapsulating these elements as proposed and shown as 'Approach 2'. The rear glass conservatory extension was reduced. The windows to the rear of the new mansard were changed to more traditional dormer style instead of a large modern aperture. Solar slates were removed from the street facing façade of the new mansard roof, although there was scope for incorporating them where they would

[5] A *brise-soleil* is an architectural feature of a building which reduces heat gain by deflecting sunlight. In the typical form, a horizontal projection extends away from the façade of a building, usually above glazing, which often uses louvers to prevent the high-angle summer sun falling on the façade, but allows the lower angled winter sun to provide some passive solar heating.

not be visible from the street. Some members of the design team felt that this meeting was pivotal in reaching an agreement on the project; and, that that agreement would not have been reached without the involvement of EH. EH brought their own building performance specialists to the meeting whose opinions and comments appeared to give confidence to the WCC attendees. Revisions were submitted to the enhanced application in September 2012 to reflect the agreed changes.

Eight months later, and 40 months after the first design meeting, conditional planning permission was granted in May 2013. The decision stated that:

> *Many of the alterations hereby approved are considered to cause some degree of harm to the designated heritage assets, but have been considered acceptable in these particular circumstances, where some of the items have been approved on a temporary basis and where the potential benefits of a pilot project, with post-occupancy monitoring is considered to provide benefits which outweigh the harm caused. Similar proposals on similar listed buildings may not receive the same support.* (Westminster City Council, 2013a)

The conditions specified that the internal wall insulation, photovoltaic technologies, *brise-soleil*, and the building management system could only remain in place for a period of 30 months from the first occupancy of the building. After this time, they must be removed as these measures were granted permission on a trial basis only. In addition, conditional approval included the requirement that many of the details of construction, including the provision of sample materials for some elements, would need to be provided and approved before work on those details could commence. This included the requirement that detailed drawings at 1:20 and 1:5 scale should be provided for all new windows, amongst other elements. Finally, the post-occupancy monitoring programme of both 119 and 125 Ebury Street was also a condition of approval. Within three months of the completion of the monitoring programme, a report must be submitted to WCC setting out the findings and conclusions of the programme. This includes an assessment of the effectiveness of all of the retrofit measures approved in the application, including their impact on the historic fabric, and shall demonstrate that the installations have resulted in an Ecohomes rating of 'Excellent' (Westminster City Council, 2013a).

Work began on site in November 2014 and the building is expected to be completed in 2016. In March 2015, the project won BRE's BREEAM residential award and became the first listed building in the UK to achieve BREEAM 'Outstanding' for its proposed design, the highest possible rating (BREEAM, 2015).

7.1.1 Summary

The 119 Ebury street project tells the story of a unique retrofit project that faced a number of obstacles in the pursuit of planning permission. The design team began the project with a pervasive belief that obtaining planning permission would be a challenge, based on the team members' individual expertise. The team was comprised of experienced professionals who had all previously worked on numerous heritage projects in London and in WCC specifically. This shared belief shaped and structured much of the design team's approach in that extra consideration, time, and care were given to the investigation of heritage and energy efficiency issues. It was important to the design team that they respect and protect the heritage of the building while pursuing significant energy efficiency improvements.

Although the design team was knowledgeable and experienced, the project took considerably longer than expected, even though the team had anticipated it would take longer from the start. This was in part due to the decision to pursue greater energy efficiency improvements after the challenge issued by the Council. However, even without that challenge, the time needed to develop a proposal that the design team felt they could submit and defend took substantially longer than expected.

The design team had held numerous consultations with WCC and used their professional skills to develop two proposals they felt were suitable, however, WCC indicated that both the original and enhanced submission would be refused. It was only through extensive ongoing discussion and the involvement of EH that led to permission being given. Even though planning permission was granted, it was conditional, and some of the key thermal improvement measures were only granted temporary permission and will have to be removed in the future.

With respect to this thesis, this case represents an instance where the primary issue with the development and progress of the project was obtaining planning permission. This initial belief held by the design team members was reinforced through the experiences of the project. It is also worth highlighting that some of the more commonly understood barriers to energy efficiency improvements were not present in this project. Grosvenor made the decision to undertake the cost of the additional work, and loss of income from the property. Although it is worth noting that the project has cost Grosvenor and the design team members a significant amount. In addition, the team was fully aware and committed to the need for improved energy efficiency. Finally, design team members were specifically chosen for their expertise in, and technical knowledge of, conservation and energy efficiency.

7.2 Applicant survey results

The first and seventh set of survey questions looked in detail at the sample of applicants and the projects they were involved in. The applicant respondents represented a broad range of roles with respect to individuals involved in retrofit projects. Individual building owners and individuals representing corporate owners were the most common, accounting for 34.5% of the sample. Architects were the second most common, representing 27.6% of the sample. The remaining 37.9% of respondents represented a number of different building industry professionals, showing a reasonable range of diversity of the sample, as well as illustrating the difficulty in quantifying the survey population. The full results of Q2 are illustrated in Figure 7.11.

The results of Q5, shown in Figure 7.12, showed that of the 93 practitioners who completed the survey, 86% identified themselves as either a senior or mid-level representative of their organisation; and an additional 10% identified themselves as a specialist. This suggests that these respondents had a good familiarity and experience with the building industry, making them well suited to taking the survey.

Q6, Q12, and Q18 combined found that applicant respondents had been involved in varying amounts of conservation retrofit projects, showing both a good and diverse representation of experience in the sample. Unsurprisingly, individual owners were most likely to only have been involved in one project, represented by 52% of individual owners from Q18. These results are compared in Figure 7.13.

Figure 7.11 : Primary role of applicant survey respondents on retrofit projects

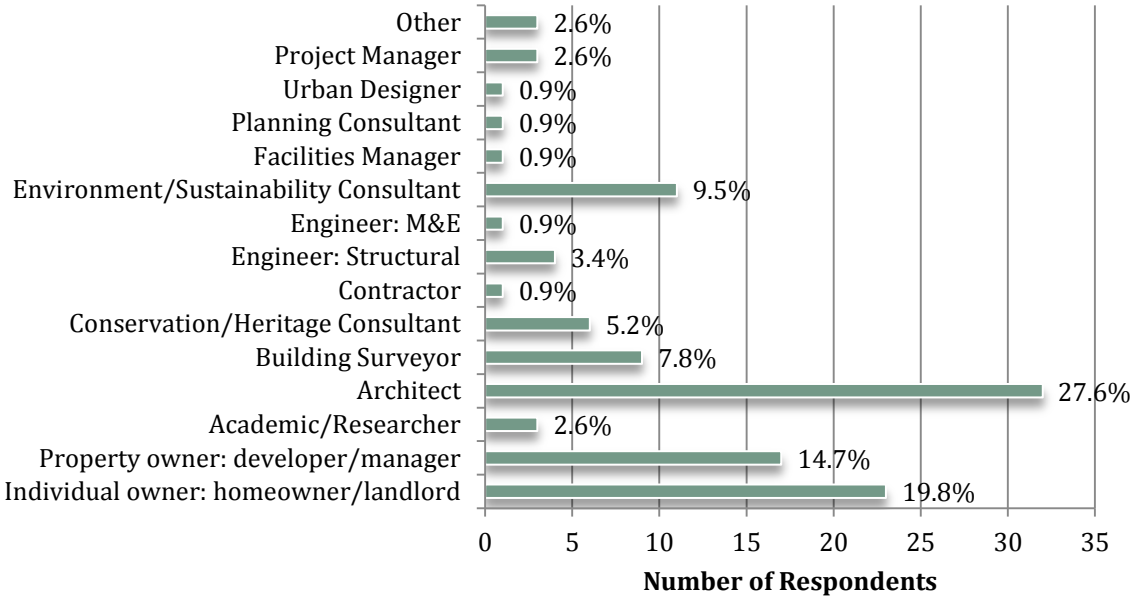


Figure 7.12 : Role-level of practitioner survey respondents

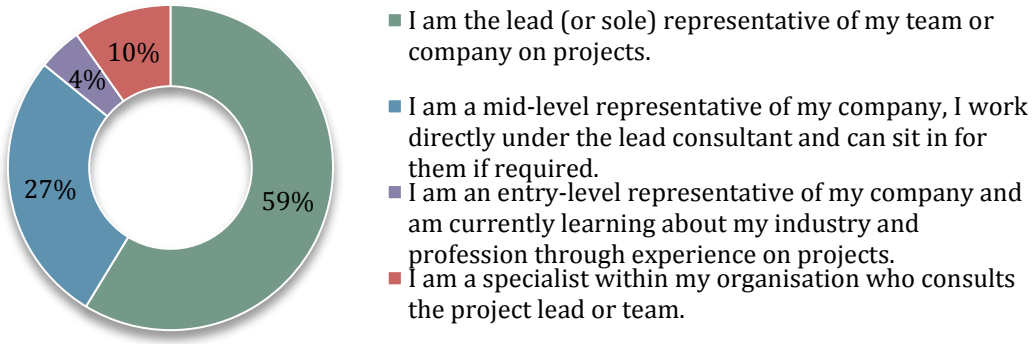
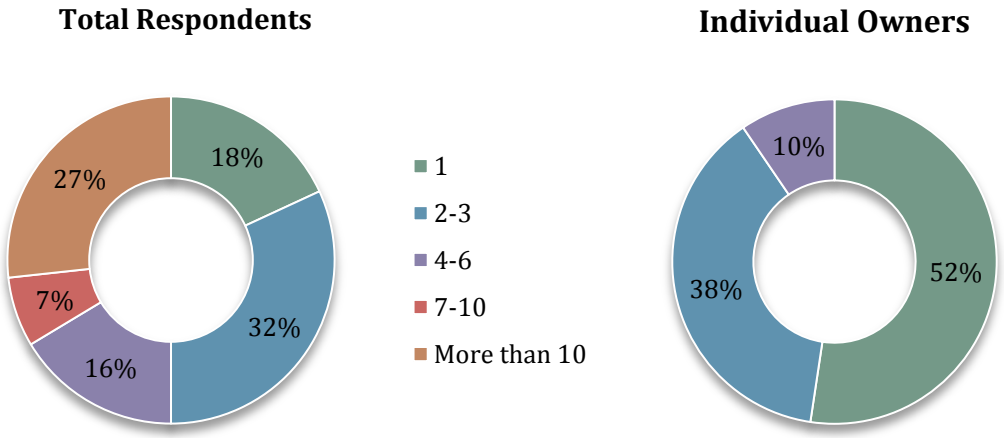


Figure 7.13 : Number of conservation retrofit projects applicants involved in



Although only 18% of applicants had worked on only one project, 40% of the applicants' projects were located within one Council. This is illustrated by the combined results of Q7, Q13, and Q19 in Figure 7.14. As building owners were more likely to have only worked on one project, it made sense that two thirds of building owners' projects had been in one Council (Q19). Of the 17 practitioners who indicated they were developers or managers for a property owner, almost two thirds also indicated they had only dealt with one Council on their projects; although in total, only one third of the practitioners had dealt with only one Council (Q7). This was likely reflective of the survey invitation being sent in the first instance to contacts at certain property companies that own property within discreet geographical areas.

The combination of Q16, Q21, and Q24, as illustrated in Figure 7.15, shows that 47% of applicants indicated that improving the energy efficiency was a stated objective of their projects; and 16% indicated that it was a stated objective in most of their projects. It is worth nothing that 14% responded that improving the energy efficiency had never been a stated objective for any of their projects.

Figure 7.14 : Number of Councils dealt with for projects in Figure 7.13

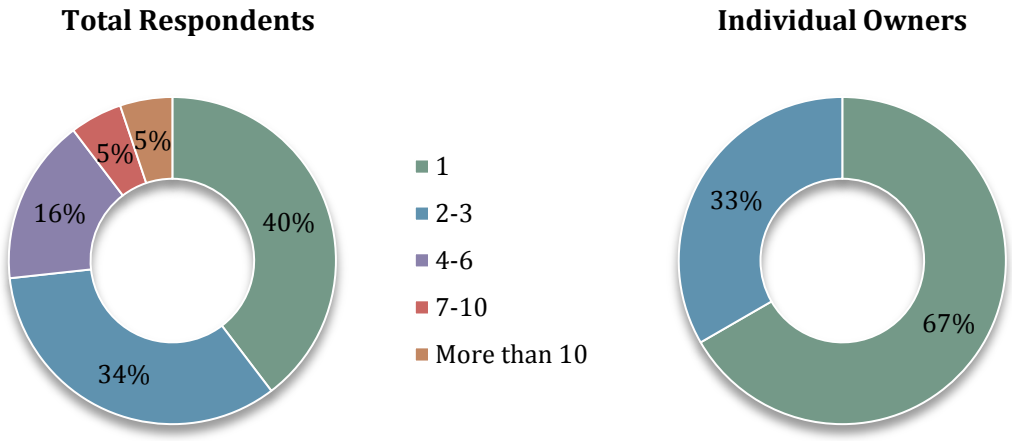
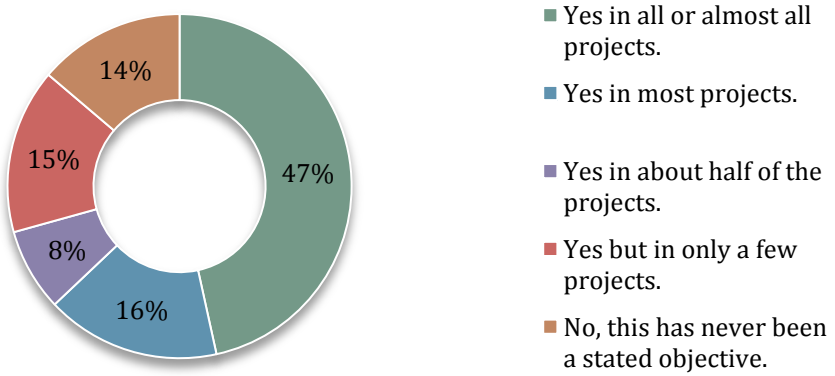


Figure 7.15 : Stated objective for energy efficiency improvements to projects



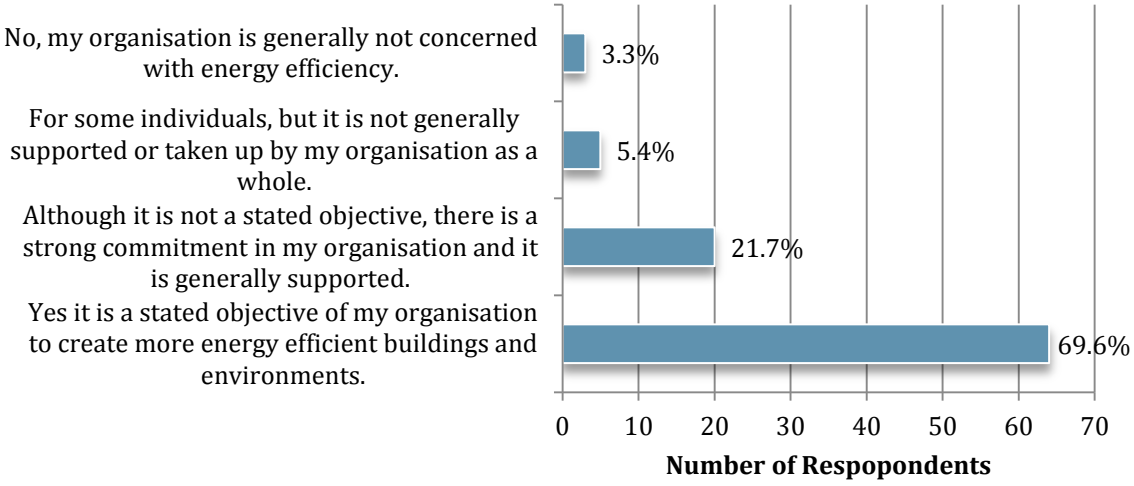
Q17, Q22, and Q25 looked specifically at the desired thermal envelope component improvements for the applicants projects; and their results are combined in Table 7.2. All of the thermal envelope components were desired improvements in at least 20% of the projects. Windows and roofs were the most commonly identified improvements; and the ground and doors were the least commonly identified. The objective to improve the thermal performance of the walls was identified in over a third of the projects, but was more likely not to have been a stated objective of the projects.

Comparing the results of Table 7.2 to the results of Q23 shown in Figure 7.16, shows of the 93 practitioners who completed the survey, almost 70% identified that their organisation was committed to creating more energy efficiency buildings and environments. By comparison, this organisational commitment was not well reflected by the thermal envelope improvement project objectives. However, it is worth noting that a commitment to improving energy efficiency does not necessarily equate to improving thermal efficiency.

Table 7.2: Objective to improve thermal envelope components of projects

	No, this was not a stated objective.	*Yes but in only a few projects.*	*Yes in about half of the projects.*	*Yes in most projects.*	*Yes in all or almost all projects.*	*Don't know or not sure.*
Doors	34% 39	21% 24	9% 11	13% 15	23% 27	 0
Windows	16% 18	16% 19	11% 13	22% 26	34% 40	 0
Walls	26% 30	21% 24	16% 18	10% 12	26% 30	1% 1
Roofs	21% 24	16% 18	16% 18	17% 20	30% 35	1% 1
Ground	41% 48	23% 27	7% 8	9% 11	18% 21	1% 1

Figure 7.16 : Practitioner organisation commitment to energy efficiency



The second set of survey questions asked all of the applicants questions regarding the UK building stock and the contribution of the built environment to UK GHG emissions. For these questions, respondents were encouraged to not look up answers, but rather make a guess if they were not certain. Results of these questions were mixed, with applicants showing both some correct and incorrect beliefs.

The results of Q27, illustrated in Figure 7.17, asked respondents what percentage of the UK building stock did they think had solid walls. Compared to the actual figure of 27%, shown previously in Figure 3.3, the results showed an overestimation by 67.3% of respondents.

Applicants were also asked about their perception of the contribution the built environment makes to UK GHG emissions. The results of Q28, shown in Figure 7.18 shows applicants had a better understanding of this issue with 75.9% selecting from 20-50%.

Figure 7.17 : Applicants' perceived extent of solid walls in UK

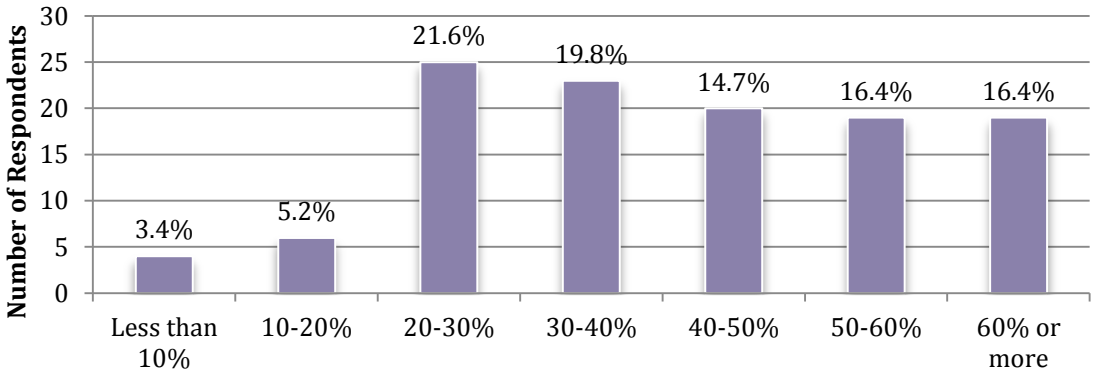
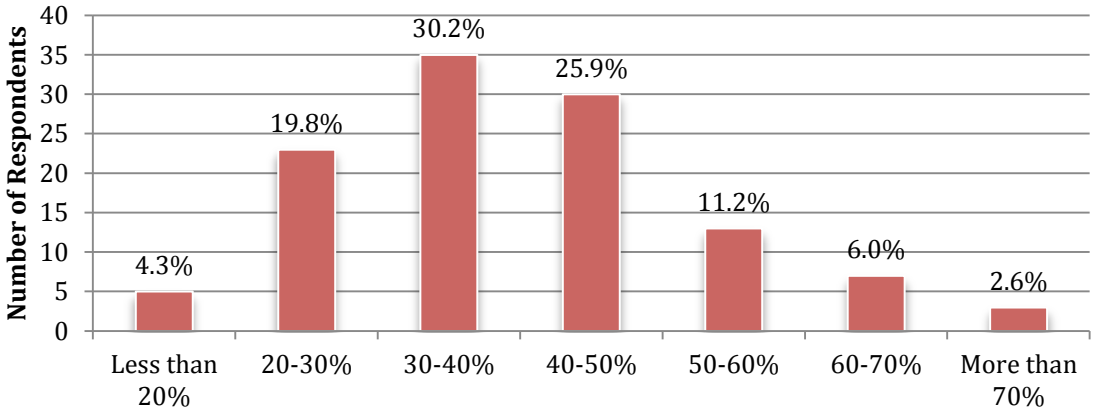


Figure 7.18 : Applicants' perception of UK built environment GHG contribution



Given the inconsistent way that built environment emissions are calculated and published (illustrated previously in Table 2.2), answers between 20-50% were considered within range.

Lastly, applicants were asked about what activity in buildings contributed the most to GHG emissions for both residential (Q29) and commercial (Q30) properties, shown in Figure 7.19. While 91% correctly perceived that heating was the main building activity that contributes to GHG emissions in residential properties; for commercial properties there was less certainty in what was perceived as most important.

The third section of survey questions asked about the applicants' knowledge and experience of planning policies and guidance; and, conservation terminology and its implications. In general, half of applicants felt 'somewhat confident' regarding conservation definitions and the policy implications of those definitions, as illustrated by the results of Q31 in Figure 7.20. Conservation areas and their requirements were understood slightly better than listed buildings, while traditionally constructed buildings were the typology applicants were the least confident about.

Figure 7.19 : Applicant perception of biggest GHG emissions impact

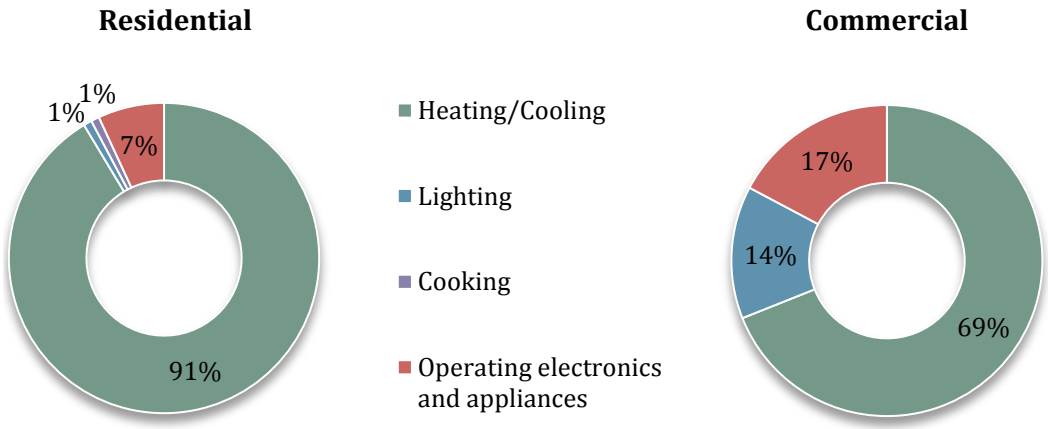
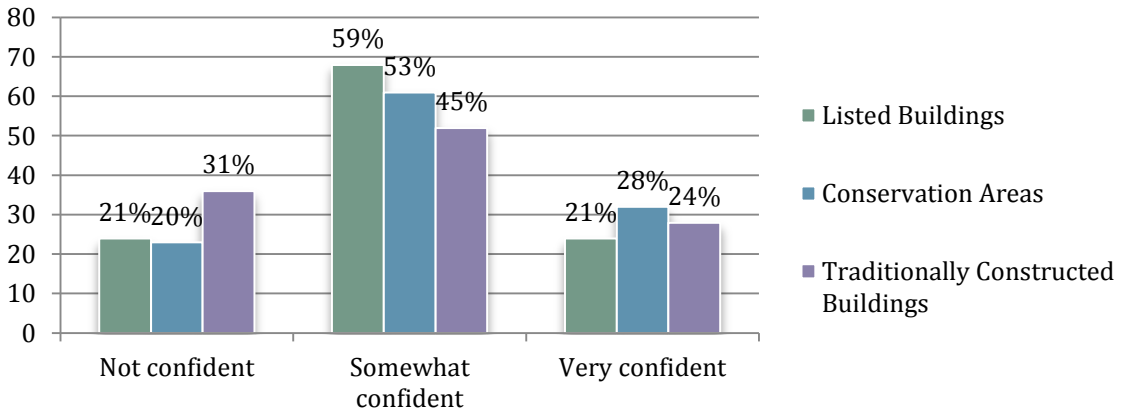


Figure 7.20 : Applicant confidence of conservation terminology



When asked if applicants had used specific policy and guidance documents on their projects, no document particularly stood out as most well used, as shown by the results of Q32 in Figure 7.21. The most commonly used was the Building Regulations Part L, followed by a Council's SPD and Local Plan. It was significant to note that of the listed documents, local Council policy and guidance were identified as more commonly used than national policy and guidance for these projects.

Perhaps relatedly, Q33 and Q34 asked what respondents felt national planning policy was and should be for as shown in Figure 7.22. 40% of applicants felt that the priority for national planning was economic growth compared to only 28% who felt it was for sustainable development. By comparison, 65% of applicants felt that the priority for national planning should be for sustainable development and only 8% thought it should be for economic growth. Maintaining cultural heritage was also perceived as being more significant currently (10%) than what applicants felt it should be (3%). These questions identify some scepticism regarding the intentions of national planning and may suggest one reason why local planning was identified as more used.

Figure 7.21 : Policy and guidance documents used by applicants on projects

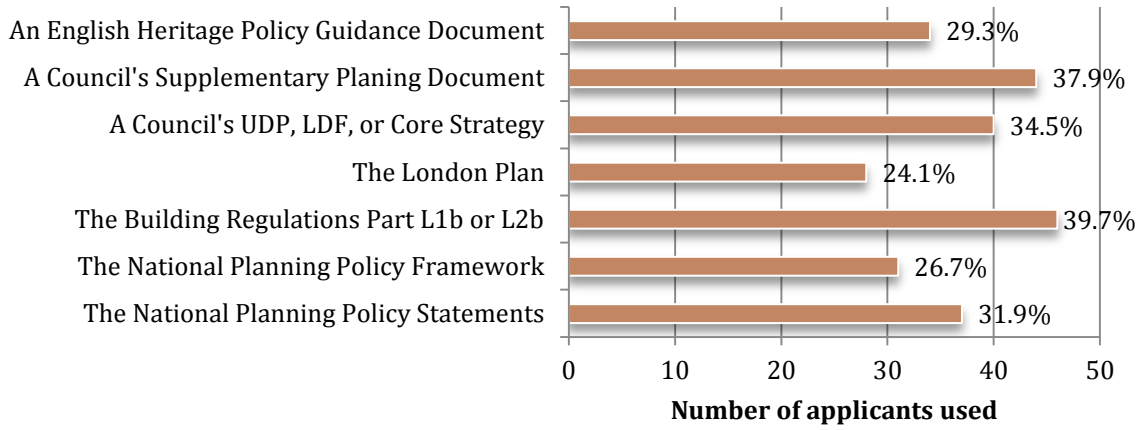
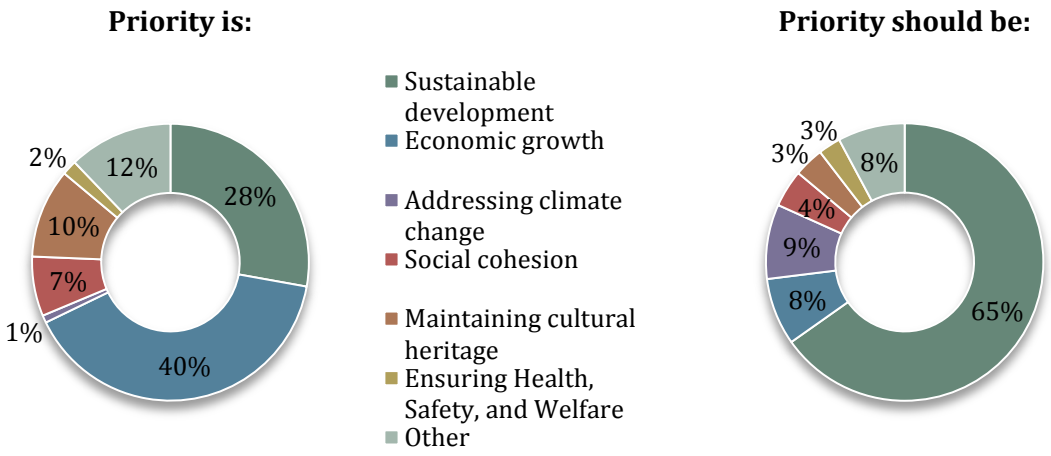


Figure 7.22 : Applicant perceptions of national planning



The fourth set of survey questions were made up of 21 rating scale statements regarding planning policy (Q35), the planning application process (Q37), and planning officers (Q39). Applicants were also given the opportunity to expand on their answers or add additional information to these topics in optional open-ended text boxes following each section of statements (Q36, Q38, Q40). Results of the rating scale statements were plotted using the diverging stacked bar chart method (Robbins & Heiberger, 2011). The individual statements were then combined and put in order of percentage agree and disagree, splitting the neutral category between them as illustrated in Figure 7.23 Although all of the statements were written positively as discussed previously in Section 6.2.1, no statements were over 75% agreement, while seven statements fell over 75% disagreement. In general there was a strong tendency in the responses towards disagreement with only three statements having more applicant agreement than disagreement.

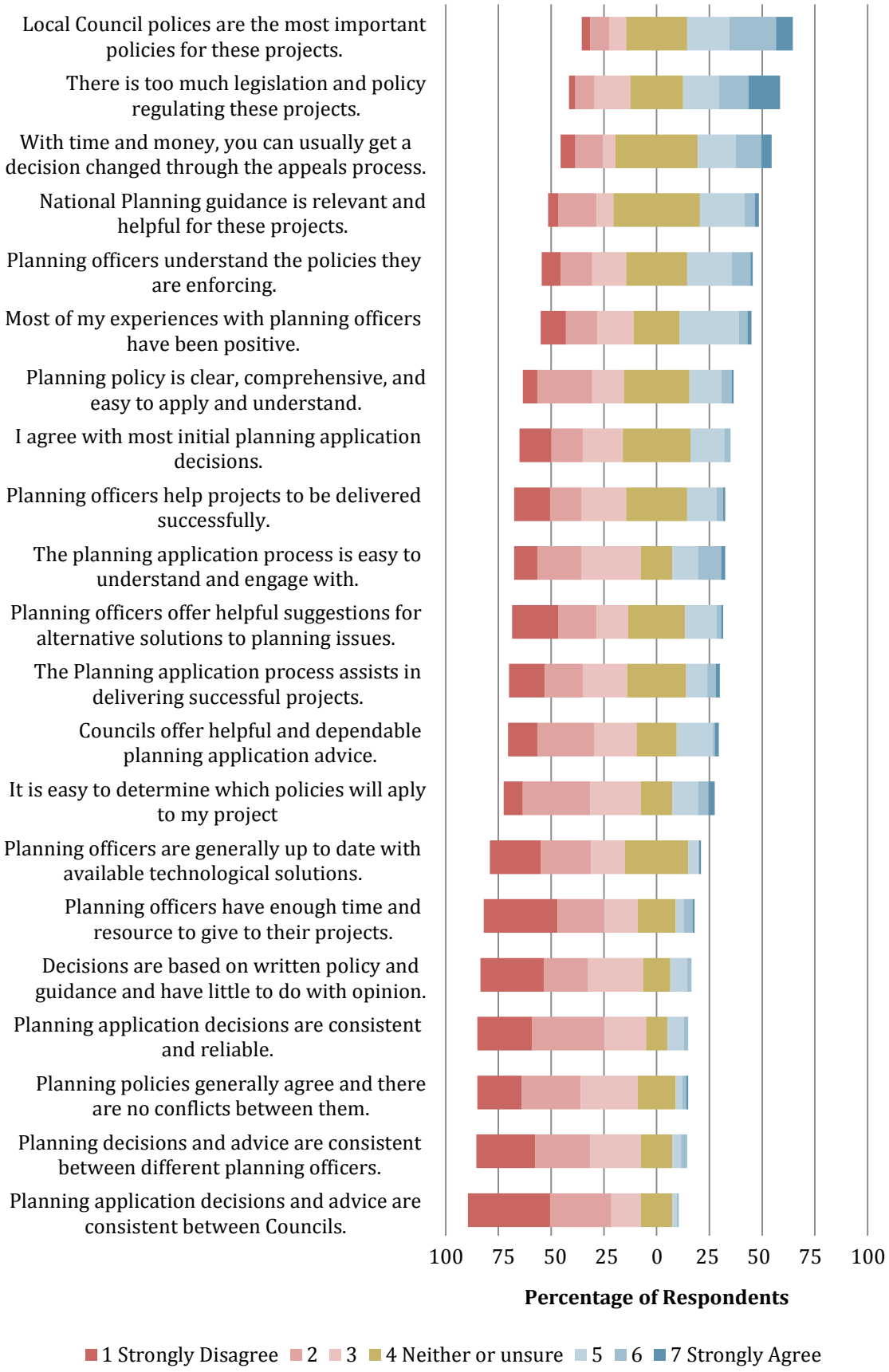
The top five statements with the strongest responses all related to issues of consistency and reliability and came from each of the three question statement groups. These included the highest ranked statement from Q37, 'Planning application decisions and advice are consistent between Councils' followed by, 'Planning decisions and advice are consistent between different planning Officers' from Q39, and 'Planning policies generally agree and there are no conflicts between them' from Q35. These were reinforced by the fourth highest rated statement, taken from Q37, 'Planning application decisions are consistent and reliable' and the fifth, also taken from Q37, 'Planning application decisions are firmly based on written policy and guidance and have little to do with Officer or Councillor opinion'.

Consistency was also a common theme in the text-box responses following each statement set. Applicants commented that policy was '*inconsistent*' (Q36) and '*uncoordinated and conflicting*' (Q36). However, even when policy was seen as appropriate, one applicant noted that, '*often good policy can be impeded by poor implementation*' (Q36). Consistency of implementation was noted by a number of applicants who commented that, '*planning policy and its interpretation differs widely between Boroughs*' (Q36). That '*performance between Councils varies widely across the country*' (Q38); and that the outcome of a planning application '*depends on the Officer and authority*' (Q40). This was not limited only to consistency between Councils, as one applicant noted that '*performance between Officers varies even within one Council*' (Q40).

Reliability also featured prominently in the text-box responses. One applicant noted that policy '*ambiguity can lead to misinformation*' (Q36). Specifically, that while '*all planning policies involve an element of interpretation*' (Q36), the system as it is '*provides clients and consultants with no certainty of outcome nor clear guidance*' (Q36). One applicant commented that, '*obtaining reliable pre-planning advice is the most contentious issue – it is virtually impossible, or if obtained, cannot be relied upon in the event*' (Q38). The lack of consistency in Officer performance also impacted perceptions of reliability as, '*the individual planning Officer is critical, get a good one, and it can be an easy process and they are helpful, get a bad one and the process is a nightmare*' (Q40).

The sixth highest rated statement had to do with the perception applicants had of Officer resource from Q39; with a majority disagreeing with the statement that 'Planning Officers have enough time and resource to give to their projects'. It is difficult to assess the main reasons for the intensity of response to this statement as it was generally not discussed in the text-boxes although one applicant noted that Officers were '*overloaded*' (Q40).

Figure 7.23 : Applicant rating statements sorted by percentages



Applicants may have felt this way in general, but this response could also have been reflective of cuts to Council spending and by extension, planning department staffing, due to austerity measures during the time period of the research study.

The seventh statement with over 75% disagreement was also from Q39 stating that, 'Planning Officers are generally up to date with available technological solutions'. This was viewed as important because, '*the crucial judgement at application stage is made by planning officers who often have little technical knowledge*' (Q36). More than one applicant commented on the '*lack of individuals who are technically knowledgeable about buildings or have an understanding of building physics*' (Q40).

The fifth set of questions were optional and asked applicants about what policy and guidance documents they thought were the most useful or significant for improving the energy efficiency of existing buildings while maintaining cultural heritage; as well as what sort of document would they like to have. The results of Q41, shown in Table 7.3, illustrates the range and diversity of documents that were available to applicants, and the diversity of opinions regarding their usefulness. 44 applicants answered Q41 which enabled applicants to list up to three documents. The Building Regulations were identified as the most useful by 45.5% of applicants. EH guidance was identified as the second most useful by 36.4% of applicants. It is significant to note that the highest ranked planning document was the NPPF, which was in contrast to the previous answers to Q32 in Figure 7.21 which identified local policy as more used.

31 applicants answered Q42 which asked for suggestions for a new policy or guidance document that would help to improve the energy efficiency of existing buildings while maintaining cultural heritage. The results of the coded text-box results are shown in Table 7.4. A common issue in the coded themes was the desire for greater certainty, as illustrated by the suggestions to: provide approved measures for heritage and traditionally constructed buildings (22.6%); have a national statement of priority for competing objectives (16.1%); and, consolidate and simplify existing guidance (12.9%). A second common issue was the desire for better integration, as represented by the suggestions to: redefine conservation principles to include energy efficiency (25.8%); have agreement between Building Regulations and Planning (12.9%); have agreement between Councils (3.2%); and, have an agreed industry standard for energy conservation (3.2%). These issues were clearly related to each other, as providing better integration would also result in greater certainty.

Table 7.3 : Most useful documents identified by applicants

Document	*Count*	*% Respondents*
Building Regulations	20	45.5%
English Heritage guidance	16	36.4%
Historic Scotland and Changeworks publications	8	18.2%
BREEAM	7	15.9%
NPPF	5	11.4%
BRE Publications	4	9.1%
London Plan	4	9.1%
SPAB resources	4	9.1%
Energy Performance Certificates	3	6.8%
Local Authority guidance	3	6.8%
Energy Saving Trust publications	2	4.5%
Passivhaus	2	4.5%
PPS5	2	4.5%
AECB CarbonLite Programme	1	2.3%
Construction Products Association domestic refurbishment publication	1	2.3%
Local plan	1	2.3%
My company guidance on refurbishment	1	2.3%
PPG16	1	2.3%
PPS1	1	2.3%
VAT regulations	1	2.3%

Table 7.4 : Applicant suggestions for new policy or guidance

Themes	*Count*	*% Respondents*
Redefine conservation principles to include energy efficiency	8	25.8%
Provide approved measures for heritage and traditionally constructed buildings	7	22.6%
A national statement of priority and a method for measuring and comparing objectives	5	16.1%
Agreement between Building Regulations and Planning	4	12.9%
Consolidate and simplify existing (diverse) guidance	4	12.9%
Incorporate whole life-cycle energy costing into assessments	3	9.7%
Need better testing and research	3	9.7%
Agreement between Councils	1	3.2%
Allow solar panels in Conservation Areas	1	3.2%
An agreed industry standard for energy conservation	1	3.2%
Develop strategies at Conservation Area/ neighbourhood scale	1	3.2%
Improve BREEAM for existing buildings	1	3.2%
Provide financial assistance for traditional improvement measures	1	3.2%
Revise Feed in Tariff to accommodate heritage limitations	1	3.2%
Thermal inefficiency tax	1	3.2%

7.3 Applicant project experiences

The literature shows that planning is perceived as a barrier to the thermal improvement of conservation properties, however, there is little data about the actual impact of planning on proposed projects. Asking applicants to share their experiences of planning, both positive and negative through the survey and follow-up interviews, was intended to: provide a better understanding of the impact of planning on these types of projects; and, in the case of the negative stories, to help identify why planning is perceived as a barrier. The full survey responses to Q43 and Q44 can be found in Appendix G and summaries of the 10 interviews conducted can be found in Appendix H.

One limitation of this work is that in most of the examples provided, energy efficiency improvements were included as part of a larger proposal of redevelopment. Therefore, it was not always possible to segregate the experiences with planning solely relating to energy efficiency improvements from projects which may have generated other conservation-related concerns. In addition, there may be other reasons than planning for why projects were not able to be completed. As this research only asked about planning, a limitation of this work is that other barriers that may have contributed to these outcomes are not generally represented.

7.3.1 Overall perceptions of applicant experiences

At the start of the interviews, applicants were asked if they felt the story they had to share about their experience of planning was positive or negative. Seven interviewees said the experience they wanted to share was negative. Two interviewees said the experience they wanted to share was positive. One interviewee said that they didn't have an overriding feeling of positivity or negativity and rather that the experience was informative.

In the survey, applicants were asked optional open-ended text box questions to share both a positive (Q43) and negative (Q44) experience of planning. There were 29 responses to Q43, however, not all of these responses were about positive experiences. Eight of the responses were that the applicant had not had a positive experience; and, two of the responses indicated they had a positive outcome on their project but this was despite planning issues. This reduces the actual number of positive experiences of planning reported in the survey to 19.

There were 38 voluntary responses to Q44, however in two cases the applicants attributed their problem to conflicts with Building Control which they indicated did not account for or accommodate the heritage elements of the buildings. This reduces the actual number of negative experiences of planning reported in the survey to 36.

Some survey applicants indicated that although they had a generally positive experience, there were also aspects of their experience they felt were negative. For example, although successful on their own project, one applicant said they knew of someone else who had also tried to put solar thermal panels on their roof in a neighbouring borough and had problems with planning. In another, an applicant commented that a junior planning officer had been difficult on their project but the head of the planning department had been helpful. One applicant who had a positive experience felt that was only because their planning officer was eventually persuaded by an external stakeholder to accept their desired design changes. Additionally, two applicants commented that although they had a positive experience the officers did not have enough time to give to their project. Specifically that *'budget cuts within the departments have meant that planning officers are so over stretched that they are not only reluctant but are unable to give projects the attention they need'* (Q43).

Although the total number of negative experiences collected were double the positive experiences, no significance can be attributed to this. As an interviewee noted, '*one tends to remember the negatives rather than the positives, … where an application runs through without any problems and the developers aspirations are met then you don't see that as a positive, you see it as a situation where everyone has achieved what they wanted to achieve*' (Applicant-7).

7.3.2 Experiences of Local Planning Authorities and officers

The experiences applicants had with a LPA or planning officers; and their subsequent influence on the project outcome, was the most commonly identified influencing factor in both the positive and negative stories. The positive experiences shared by applicants mostly praised officers or the LPA for their responses and assistance with the projects in 12 of the 19 positive survey responses. Applicants highlighted that they felt their experience was positive because the planning authorities they dealt with: *'respond quickly and sensibly'*; *'understand the constraints of the project'*; *'are supportive and constructive'*; *'offer advice and alternative solutions'*; and, *'show a great deal of enthusiasm and drive for the project'* (Q43). One interviewee noted that '*we've found* [the planners to be] *pretty good and helpful…. It's usually the people who do the historic buildings that are very friendly. They are interested in design. They are interested in what things look like and how it's linked into the historic context'* (Applicant-4). However, they tempered that by adding, '*but they are grappling with… these policies… and they are not used to energy improvements*' (Applicant-4). Another applicant credited planners with '*being quite open…* [and]

prepared to look at it. But sometimes it's quite hard to overcome strong opinions' (Applicant-10).

All 36 negative story respondents indicated that a key reason for their experience came from how an officer or LPA had handled it. The most common issue identified by 15 survey applicants was 'objections due to harming the character or fabric of a conservation property'. This was expressed in different ways. For example, one applicant wrote that Councils are '*systematically opposed to Listed buildings alterations, even minor'* (Q44), while another commented that their negative experiences were due to a '*subjective interpretation of "sense and place" and what needs to be conserved*' (Q44). One interviewee expanded on this, expressing their frustration at what they saw as a '*culture* [where*]… anything that exists has an intrinsic value… in contrast to the concept that all buildings have unknown futures and their bits will expire at different dates*' (Applicant-1). Another noted that '*occasionally… there is a difference of interpretation about what is worth preserving and what isn't and that becomes almost an academic argument about opinion or authenticity of styles*' (Applicant-4). Other survey applicants commented on being frustrated with the planning response to specific building components within their proposals including: the *'rejection of incorporation of double glazing into plans'*; '*maintaining the same ridge height to the extension as the house'*; being *'forced to retain a very small section of heavily painted solid brickwork*'; and, the LPA regarding '*the application of insulated render to both front and back facade as ruining the building's symmetry, even though the front facade and part of the back facade are already rendered*' (Q44). On a single interviewee project, '*key objections areas were upgrading the windows… the appearance of internal wall insulation… the addition of a mansard roof… the rear elevation… the rear extension… and the PV panels*' (Applicant-10).

The second most common issue raised for why an officer or LPA had contributed to a negative experience in eight of the applicant responses was 'inconsistent advice'. One applicant commented that their '*projects have been damaged and delayed by inconsistent … Planning Officers*' (Q44). Another stated that '*on more than one occasion planning advice and support has not only changed with the appointment of a new planning officer but it has been completely reversed*' (Q44). One interviewee talked about how they felt that '*there is inconsistency in* [the assessment of] *projects… sometimes you get a planner that has a bee in their bonnet*' (Applicant-4). While another noted that, '*some conservation officers are helpful… but with any borough, you've got to find the person that will be helpful… most boroughs have somebody, it's finding them, and that's not an easy process… for every one of those you find, you'll probably find three who just aren't interested*' (Applicant-5). One interviewee discussed how they made the decision to purchase their home based on the

information provided by their conservation officer about the positive likelihood of planned works being acceptable. However, that conservation officer retired and when they were finally ready to start work, the new conservation officer was not in support of the proposed works. The same interviewee noted that '*you watch programmes like Grand Designs and you see people doing things… it seems to depend on which part of the country you're in… I mean, maybe there's reasons for that but it doesn't seem to be consistent throughout the country*' (Applicant-8).

The third most common issue raised by seven applicants was 'resulting in additional costs'. One applicant wrote they felt that, '*in effect the conservation officer is imposing their will and forcing me to incur greater cost. It is almost as if it were punishment for buying the house*' (Q44). An interviewee noted that in the building they live in which is in a conservation area:

> *…people are interested in upgrading their windows… [but] there are complications in asking anything like that because there are fees… on top of any other charges… they are very extortionate… it puts it completely out of the range of possibilities… you have to go through so many hurdles to get this simple thing done to your flat, so you just won't bother to do it because you couldn't save enough money and energy to justify the cost of doing it over ten or fifteen years.* (Applicant-4)

Another interviewee who is an architect commented on some of the impacts of the costs saying that their project was '*unbelievably protracted, I think we were just lucky that the client stuck to their guns, but… it's very painful for us, because you never really get paid for the chasing, and there was a lot of chasing*' (Applicant-5). An interviewee who is a homeowner and has spent a long time trying to overcome their planning issues agreed saying, '*it's cost us a fortune, that's one of the sensitive points*' (Applicant-8). This also has an impact on the consultants involved in the submission of a planning application. '*You couldn't sustain a business if all our projects were like this… so I think it's been quite a rewarding project for the people and the practice for many reasons, but our accountant might look at it very differently*' (Applicant-10).

Additional costs also included increased time on projects. For example, an applicant wrote that, '*Our first deep retrofit within a conservation area took 12 months at planning to win, following deliberate obstruction of the due process by the case officer involved*' (Q44). An interviewee had similar issues commenting that '*the overall negotiations and listed buildings things… they probably did add about three months*' (Applicant-1). Another commented on the impacts of extended projects saying that planners '*just prolong the planning process and that almost inevitably involves projects being watered down so that a*

common denominator is reached' (Applicant-7). Enduring the extended period of time was felt to be necessary by one applicant. '*If the client had forced the planning authority's hand at any point, the scheme would have been rejected. So it was a case of actually accommodating this very, very long attenuated consultation process, or abandon the project*' (Applicant-10).

The fourth most common issue raised, also by seven applicants, was 'lack of knowledge'. Applicants stated that officers they interacted with were: '*out of date*'; had a '*lack of knowledge of technical advancements*'; and, had '*a lack of understanding of how to achieve sustainable buildings*' (Q44). Additionally, one interviewee noted that '*the planner I dealt with didn't seem to have any understanding of energy issues…* [and] *didn't even seem to think that it mattered at all to them…he was oblivious to it*' (Applicant-9). This was attributed by two interviewees to their belief that '*education of* [planners in] *environmental planning issues is weak*' (Applicant-6), and that:

> *…most people in the planning office… never received any form of training or education about carbon control or carbon reduction… so I think they're probably generally predisposed that you will pull the wool over their eyes, because there's lots of developers out there that will try anything. So that's the position they start from and I think generally, this is my own personal, very pessimistic take on the planning system… nobody got sacked for saying no... unless you're really serious you'll just get rejected and then either go to appeal or you'll put in another application.* (Applicant-5)

This issue of 'saying no' as a safe position was echoed by two interviewees. One architect:

> *I think if they can say no, then they say no. It's easier and they don't have to justify themselves and if they say yes they're criticised because something could happen in the future. So they may as well just say no before anything happens, and I think… if there's any doubt, they just say no and then they haven't got a problem later on.* (Applicant-7)

And one home owner:

> *This is just my feeling, well, my husband and the architect have the same feeling, that the 'modus operandi' is to block everything, just to block and make it difficult…. Before you open your mouth, there's a stance that whatever you say will be resisted and blocked.* (Applicant-8)

Four additional issues were identified in the data analysis that led to survey applicants having negative perceptions of planning. First, two survey applicants wrote about taking their projects to appeal in order to gain approval. An interviewee also had to take their

project to appeal although they did not get approval (Applicant-8). Second, two applicants felt negatively affected by the statutory consultation process. Objections through the consultation process were raised '*by a Conservation Society*' (Q44) and '*completely uninformed residents*' (Q44), contributing to the applications being refused. This was expanded upon by an interviewee who talked about:

> *…the Highgate Society, they just immediately said it's outrageous, you know, you can't do this… it was all hysterical really, and there wasn't even a debate to be had with them which I was a bit appalled by… although it's approved, the planners were quite careful wording their approval… because they were so worried they were going to get castrated by the Society telling us, "Don't tell them we said this, we can't possibly support you, but we can support you, but we can't." It's mad!* (Applicant-5)

Another interviewee expressed frustration with the consultation process on one of their projects:

> *We had an extensive amount of consultation and several visitors from various conservation groups and officers to the property and councillors. And the overriding impression that I was left with was that none of these people have the appropriate skill set for being able to evaluate what technically, the value of what was being done. In that there was nobody with a technical background, nobody with an engineering background, nobody with a building construction background…. I think it's pop culture. It's a sort of, you know, we did a lot of work… and it was very, very hard to get anybody to address how the building was performing. It was all about appearance… which is very superficial and so I would say in my worst moments there's a degree of superficiality in the way some of these choices are made.* (Applicant-10)

Third, two applicants commented on the difficulties raised by a lack of a '*sustainable approach to listed buildings at planning level*' (Q44). This was echoed by an interviewee who spoke of their frustration in trying to achieve an eco-renovation and that '*the idea of sustainability* [did not] *have any real sway with them…. the fact it was a historic building was the primary reservation*' (Applicant-2). Another interviewee commented on their frustration with this issue saying that:

> *…in order to realise the government's 2015 carbon emission reduction targets, then you are actually going to have to do some very serious improvements to existing buildings' performance. If the simple or logical*

> *way is to actually do that by improving the fabric of the buildings then they are going to have to face up to allowing some changes to the internal and external appearance of some of these.* (Applicant-6)

Finally fourth, one applicant felt negatively that their project was '*refused at committee by some completely uninformed Councillors*' (Q44). However, one interviewee contrasted that by commenting on the positive influence of Councillors, discussing a project they knew about where they felt that having the Ward Councillors on board would lend itself to approval (Applicant-7).

7.3.3 Experiences of planning policy

Experiences and opinions of policy were mixed. One interviewee commented that '*the fact that the planning system doesn't give us our first way is not always a bad thing. It is important in Britain to have a robust planning system because actually it does have a significant heritage which it should protect*' (Applicant-10). A survey applicant spoke favourably about policy, stating that the enforcement of the Code for Sustainable Homes and Ecohomes requirements resulted in a more sustainable building. However, another survey applicant felt that strict adherence to policy led to decisions that are *'too often based on statistics and policies rather than well thought out rational points of view'* (Q43). This was echoed by an interviewee who commented on the problems they've had with officers with '*a dogmatic adherence to policy, without any sort of leeway being given in terms of the nature of the proposals*' (Applicant-7). Although when discretion in policy interpretation is applied, another applicant noted that this can lead to '*inconsistency during* [the] *planning process with regard to policy interpretation and opinion* [which] *increases uncertainty, costs, and prevents development*' (Q44). However, discretion can also be seen as positive as '*there has to be an element of subjectivity involved in any planning and application process as you can't cover every eventuality*' (Applicant-7)

Interviewees were asked either: if there was something specific about the planning system or process that they feel enabled their positive experience; or, what should change within the UK policy environment to help prevent their negative experience. One interviewee expressed hopes for the impact of the NPPF, that it might '*change the way people see the communities in which they live, identify relevant opportunities, and support those opportunities which is the idea*' (Applicant-1). However, another interviewee had some concerns about the NPPF noting, '*potentially it can be quite useful because it's written so badly that you can interpret it in either way… but the problem is, you know, that similarly the other side can argue their way too. It's not clear enough I think*' (Applicant-5). One interviewee had direct experience with this commenting that:

> *The polices are problematic… because they are open to aesthetic interpretation…When* [myself and the conservation officer] *wrote our appeals arguments… we both quoted the same policies and I guess I'm arguing one way and she's arguing another way… I mean you have policies where there should be a preference for environmental enhancement and certainly this would be an enhancement, but on the other hand, some people would think that it violates, like an aesthetic argument… but there's disagreement on that. The Council, the Councillors, and the planners didn't think it was a problem. The conservation architect didn't think it was a problem, but this person does, well, some people in the conservation team think it does.* (Applicant-8)

The interpretation of policy was expanded on by an interviewee who felt that the issue was with the policy guidance provided.

> *Where it is provided, it is sometimes unclear, so there is a tendency to look at all proposals from a negative perspective, rather than a positive perspective. It's all down to harm, what harm is being done to the heritage asset. If it's change, it must be harmful. I think it's a lack of guidance that underlines all of that… There's no definition or measurement of harm itself.* (Applicant-7)

Policy guidance and its interpretation was critiqued by another interviewee who noted '*there is so much open to interpretation… you can read the guidance… but the planners say in this borough this is the case and that isn't the case… so you can't actually rely on the guidance, it's pretty much useless*' (Applicant-9).

One interviewee felt that there should be '*greater consideration of sustainability in planning terms …* [as] *there's* [not] *much allowed consideration for the idea of sustainability*' (Applicant-2). Specifically, they thought this would allow more people to confidently undertake sustainable retrofit. Another interviewee felt that this should happen by '*getting building control to the table at planning stage*' and that there should be '*more of a technical requirement when it comes to planning policy*' (Applicant-10).

There was also confusion surrounding PD and what measures are allowed, '*that you'll find various interpretations… in the north of England the Councils are happy to say that it is, but most London boroughs, they generally see that as not*' (Applicant-5). Another interviewee who is an architect shared their experience on a project where they wanted to install external insulation to the garden façade of a Victorian solid-wall building that was not listed nor in a conservation area. They were told by their builder they needed planning permission. They expressed frustration that they '*can't get an answer out of the planners*

and… have had contradictory interpretations from industry… versus my interpretation… versus what the planners supposedly told industry… so far the planners have failed to clarify PD to me' (Applicant-9).

Other conflicts in policy in addition to energy efficiency and heritage were discussed. For example, one interviewee spoke about the conflict between the legislated requirement for the provision of employment opportunities and affordable housing, and conservation saying, '*although the site is within a conservation area and is on the boundary of two others, those considerations would not be as important as the affordable housing component of it*' (Applicant-4).

7.3.4 Experiences of other influencing factors

The planning application process for conservation properties can involve multiple stakeholders from within the LPA and externally. The involvement of these individuals and entities impacted the applicant experiences both positively and negatively.

Four survey applicants attributed part of their positive experience to the involvement of English Heritage on their projects during the planning process. One attributed the success of their project to EH who '*were very helpful in developing the technical solution which would minimise risks to the fabric of the building*' (Q43). An interviewee also attributed the success of their project to EH saying that:

> *…there weren't major issues with the planning. It all went surprisingly smoothly. I think one of the reasons for that… I think what happened is that because it was a listed building… and quite well renowned … so the planners were aware that a lot of parties were looking at this very closely. EH was involved and basically the planners decided to take a step back and ultimately let EH take the lead…. The managing director has quite a good relationship with EH and he managed the process quite well and as a result our experience with the planners went really smoothly. They basically just signed off anything that EH suggested.* (Applicant-3)

Another also credited progress on their project to EH:

> *There's a huge difference between the approach of EH … and the local conservation teams… At one stage there was sort of an impasse and EH called in a number of people who came down and reviewed the scheme and at that point a lot of things were unlocked… As soon as there were people with technical insight that were "approved" … on their* [the planners] *side… the project was seen as a viable thing.* (Applicant-10)

Experiences with building control officers were both positive and negative. One applicant who attributed their positive experience to a building control officer noted that their advice was '*given freely and with consideration of the building*' (Q43). An interviewee was pleased with how building control '*immediately responded with great clarity, so I know it is possible at that level, but I also wonder whether they actually need to work much closer together* [with planners]' (Applicant-9). However, two applicants who reported negative experiences attributed this to their experience of building control officers having '*no understanding of traditional buildings*' (Q44) resulting in subsequent '*conflicts with building regulations over the energy efficiency aims and the need to pay due respect to the building*' (Q44). This issue was reiterated by an interviewee who stated that '*the planners weren't hard on us, the most difficult part of it was building control*' (Applicant-4). In the example they provided, although planning permission was obtained, the building regulation requirements for insulation could not be met within the approved building envelope.

One applicant attributed their positive experience solely to the involvement of their Parish Council. Their Parish Council '*have published their own Village Design Statement*' (Q43) which helped persuade the planning officer to accept the proposed works. Although they felt their overall experience was positive, the same applicant wrote that '*rarely, if ever, does the leadership on quality of design, etc., emanate from the Planning Department*' (Q43). However, the influence of a Parish Council can be variable as one interviewee noted, although their Parish Council came out in favour of their application, it did not seem to make a difference in the final planning decision (Applicant-8).

One applicant commented their experience was positive due to being *'given a grant of £8000 towards a new roof (including a high level of insulation) from our Council'* (Q43). This money came from the Council's Historic Building Fund. Applicant-1 talked about the motivational component of grant schemes, as a grant scheme from Islington Council inspired them to pursue energy efficient retrofit measures. Even though they were not able to get permission to do everything they wanted, they felt the grant scheme was a positive factor. Applicant-3 commented that money and involvement from the *Building Schools for the Future*[6] programme helped to facilitate better design quality.

[6] Building Schools for the Future was the name given to the British government's investment programme in secondary school buildings in England intended to run from 2005 to 2023. The government aimed to stop the programme in 2012 due to insufficient progress and impact. (GOV.UK, 2012)

7.3.5 Impacts of applicant experiences

Interviewees were asked different questions about how their experiences had affected themselves and others involved in their project. Specifically, interviewees were asked how their experience made them feel about engaging in a future retrofit project; and, if they felt their experience was unusual or typical. As most of the interviewees were architects, many of them talked about their ongoing interest in and passion for the historic environment. One commented that theirs '*is a conservation practice… we are interested in the authenticity of a given style and we are also interested in good quality modern work, and doing both in practice from a design point of view and responding to a client's brief*' (Applicant-4). With respect to future projects, the need to '*advise the client of the dangers, of the risks*' (Applicant-1) was raised by more than one interviewee. There was an expressed need to inform the client that, '*you can have it but it's going to cost you a lot of money, and you've probably got to do a lot of planning which again costs you more money, because you're also paying me, so that's a bit of a double whammy sometimes*' (Applicant-5).

There was also the sentiment that architects have '*a professional responsibility to argue to make the case*' for energy efficiency (Applicant-1). This determination may be bolstered by negative experiences, as one interviewee stated, the highest impact these projects had on them was '*it makes me feel more militant*' (Applicant-1). However, this can have negative implications as, '*most serious conservationists tend to cling onto for dear life to all their conservation issues and many people on my side of the fence, we perhaps tend to push even harder in the opposite direction, where the two groups could probably actually meet and reach a consensus*' (Applicant-5). This could lead to a complete break-down of dialogue as one interviewee noted:

> *I am at the stage where I'm tempted to interpret PD and not go through planning… I want to make energy efficiency improvements which are already costly and time consuming… I'm not sure I would actually try to get advice in advance* [again] *because it might not mean anything… it might just be a waste of time.* (Applicant-9)

Many of the architects, even if they had a negative experience, expressed a strong desire to continue trying to achieve energy efficient retrofit projects. A number also expressed their interest '*in the conservation aspect of architecture…* [and wanting] *to do more if the opportunity is given*' (Applicant-3).

However, one interviewee who works for one of London's Great Estates[7] spoke about the fatigue that sets in. Even though their estate has a sustainability policy, they feel that it keeps them at an even, yet not aspirational level. They have many projects to get through per year, and don't feel that it's worth an argument or fight with the Council over every project. They find that this means that some projects meet the minimum rather than the maximum sustainability levels. However, they also noted that:

> *…policies or opinions may…change over a period of time. So you can probably be more positive than if you were developing a building to sell on… if you're an estate you can say, well, this is as far as we got this time and next time we could go a bit further, so there's always that hope that views will change over time.* (Applicant-7)

Another interviewee commented that '*I would do it again because I'm committed to a comfortable home and energy saving, but a lot of people would not. They may not have such strong intentions or be as committed as I am and would probably not bother*' (Applicant-9). A possible example of this was conveyed by a building owner interviewee who stated, '*I never want to negotiate with conservation officers again… It's been a huge amount of money… and immense frustration and kind of disillusionment. I've actually turned quite anti-conservation whereas I used to be extremely pro*' (Applicant-8).

Seven interviewees felt their experience was typical. Although noting that '*every project is obviously unique, but the experiences as a whole are typically unusual… The response we've gotten for that sort of work, it's typical… it's all exactly the same*' (Applicant-5). Another noted that since their first experience with an energy efficient upgrade to a solid-wall building in 2009, '*we've had quite a few people come over and also people have taken interest in my blog* [about my experience and]*… they raised issues about planning… and are very confused about it. So the confusion around all of this seems to be very typical*' (Applicant-9). Two interviewees felt their experience was not typical because '*the project was not typical*' (Applicant-2) and because of the '*unlikely relationship with the various parties involved*' (Applicant-3). One interviewee felt that their experience was unusual because of the unique nature of the project, but that '*certain elements are typical, the length of protraction certainly…. Also the lack technical knowledge is highly typical. That an*

[7] London's Great Estates are the consequence of developments by single owners, often in the Georgian period. More recently, new estates have emerged. These estates are typically characterised by a unified management code, and the transformation from aristocratic family businesses into management companies that look after large diverse portfolios of land across London. (Murray & Yates, 2013)

artistry degree is enough and that you don't have to have anything else in order to evaluate the built environment. That's pretty typical' (Applicant-10).

7.4 Discussion of applicants' perspectives

The research into the applicants' perspectives sought to understand why planning was perceived as a barrier to the thermal improvement of conservation properties. This section discusses the results of the analysis of the case study, applicant survey, and interviews and identifies key findings and areas for future work. It does so by examining the context from which the applicant's formed their perspectives, looking at the applicant's opinions and experiences regarding specific policy and guidance documents, and discussing the implications of the opinions represented by the data.

7.4.1 Applicant context

Before discussing the specific research findings in relation to the applicant perceptions of planning, it is important to examine and understand the context from which the applicants came from. The first contextual element to be examined is the diversity of the survey sample and population. One important result of the survey was to illustrate the complexity in identifying who the relevant stakeholders are in the application process, as 14 different roles were represented by the respondents in Q2 (Figure 7.11). Different stakeholders, even on the same project, may have unique objectives to their role, and may interact with policy in different ways. Subsequently, they may need different information from policy and guidance depending on their role. It is therefore important that policy and guidance take into consideration the end-user and their specific needs. Future work could help clarify this issue by conducting research on the different perspectives of planning from stakeholders engaged in the same projects.

The second contextual element to be examined is the prevalence and desire for applicants to improve the energy and thermal efficiency of their projects. Over half of the applicant projects had a stated objective to improve energy efficiency (Q16, Q21, Q24, Figure 7.15). However, objectives for thermal efficiency improvements to specific building envelope components were low (Q17, Q22, Q25, Table 7.2). This disparity was also highlighted by almost 70% of practitioner respondents saying their organisation had a commitment to creating more energy efficient buildings (Q23, Figure 7.16), which was not reflected practically in either of the previous examples. This highlighted a potential issue on the part of industry stakeholders regarding the meaning of energy efficiency, and how best to achieve it. As discussed previously in Section 3.1, SAP and SBEM calculations include a number of considerations when calculating energy efficiency, although thermal efficiency

is a large component of each. The survey did not seek to absolutely quantify the amount of improvement, if any, the applicants had sought on their projects. However, the responses to these questions suggest there may be great diversity in what is meant by stakeholders when they talk about 'improving energy efficiency'. This was also reflected in the complexity of overlapping and interwoven objectives described in the applicant project experiences in Section 7.3. Although applicants were specifically asked about their experiences with planning and energy efficiency improvements, their comments also involved other aspects of development not related to energy efficiency. It is clear that although improving the thermal efficiency of existing buildings is a stated objective of the government, the objective for these improvements by project owners or practitioners is not as high as it could be in practice. While this dissertation examines English planning as a particular barrier to the implementation of thermal improvements, it was clear from the survey results that that there is scope to increase the total number of thermal improvement projects being put forward. Therefore, better understanding stakeholders' intentions to improve existing buildings was identified as an area for future research.

The third and final contextual element to be examined is the understanding by the applicants of how the built environment contributes to GHG emissions; as assumptions about the nature of the problem could influence related actions. Applicants were generally well informed, showing an understanding of the contribution of the built environment to GHG emissions (Q28, Figure 7.18) and what factors had the greatest impact (Q29, Q30, Figure 7.19). Although applicants overwhelmingly identified heating and cooling as the most influential building factors to contribute to GHG emissions, this did not necessarily translate to thermal envelope improvements in their projects. While the intention to improve energy efficiency was not a requirement for survey participation, this finding supports the previous one suggesting that even though stakeholders may be aware of the issues, the intention to improve energy efficiency on projects is not always present and is worthy of additional research.

7.4.2 Opinions and use of policy and guidance documents

The survey results showed that the three most-used documents by applicants on conservation projects were the Building Regulations (39.7%), a Council's supplementary planning document (37.9%), and a Council's local policy (34.5%) (Q32, Figure 7.21). Comparing these results to which documents applicant's found most useful in regard to improving the energy efficiency of conservation properties (Q41, Table 7.3) found that the Building Regulations were identified as most useful by 45.5% of respondents, but local authority guidance was only identified by 6.8% of respondents and local policy by 2.3%.

Instead, English Heritage guidance documents were identified as the second most useful by 36.4% of respondents and publications by Historic Scotland were third with 18.2%. The NPPF was the policy document rated most useful and was fifth, but only by 11.4% of respondents.

These findings suggest that although applicants use local policy and guidance the most for making applications; aside from the Building Regulations, when it comes to improving energy efficiency, it is external guidance that applicants find most useful. The findings also illustrated that there was a diverse amount of guidance to choose from. While EH was clearly identified as the most useful, 12 other sources of guidance were identified. EH was praised, '*as they do have good experience of building physics which most of us don't have*' (Q42); yet they were also criticised by applicants for appearing '*to be only conservative thinking and* [having] *an unwillingness to acknowledge or even explore that sustainability and heritage CAN go hand in hand*' (Q42). This helps explain why Historic Scotland publications, which are often based on in situ research, ranked as highly useful, even though they were not legislatively applicable to the applicants' projects. Two respondents commented specifically that EH should adopt Historic Scotland practices, particularly with respect to conducting good research into '*sustainable interventions to heritage affected buildings*' (Q42).

This diversity of available documents and inconsistency of opinions regarding those documents was also highlighted by the results of Q42 (Table 7.4), which asked applicants to propose a new policy or guidance document to improve energy efficiency while maintaining heritage; and, the from the applicant project experiences discussed in Sections 7.3.2 and 7.3.3. Two strong themes to come out of the results analysis were the desire for greater certainty, and the desire for better integration. In particular, the results illustrated a clear schism between policy and advice on energy efficiency, and policy and advice on conservation and heritage, with the majority of applicants proposing that the two objectives be clarified at the national level, and in general, better integrated. Of the 31 applicants who answered Q42, four commented specifically on the complexity and diversity of guidance, suggesting it should be consolidated and simplified. In addition, seven applicants expressed a desire for clearly approved measures for heritage and traditionally constructed buildings, which can be understood as related to the diversity of guidance, as it is typically guidance documents where specific measures are suggested.

Therefore, a key finding with regards to the research question of why planning is perceived as a barrier to thermal envelope improvements, was to identify that the policy and guidance documents available to direct and assist applicants on their projects were not fulfilling their needs consistently. This was shown to be due to both a lack of

integration between energy efficiency and conservation objectives as well a lack of certainty regarding what measures or interventions are acceptable and appropriate.

There was a strong suggestion on the part of applicants that these issues should be addressed at national level, and yet it is equally important to note that when preparing applications, most applicants indicated they used local policy and guidance the most. This suggests that although addressing the clarity of policy and guidance with regard to the thermal improvement of heritage properties should occur nationally; and, how that information is incorporated into local policy and guidance will still be extremely important.

7.4.3 Opinions of the planning process

The results of the rating scale questions and their follow-up text box responses (Q35-Q40, Figure 7.23) support the survey findings about policy and guidance and further illustrated the impacts of these issues on applicants. These perceptions were explored further in the applicant project experiences discussion.

The applicant project experiences and rating statements show that the question of planning evoked strong emotional responses from the applicants. A seven-point scale was selected to avoid *end aversion bias* (Choi & Pak, 2005), yet all 21 rating scale statements had at least 3% of respondents select the '1-strongly disagree' option, and five statements were selected by at least 25%. Additionally, as discussed previously in Section 6.2.1, all of the statements were purposefully presented favourably to avoid *acquiescence bias* (Johns, 2010), yet only three of the 21 statements rated higher agreement than disagreement. In addition to the strength of these scalar responses, the language used in the optional follow-up text-box responses was also strongly emotional; for example, the comment that policy and legislation was '*too corrupt or stupid for words*' (Q36). Evidence that the planning issue had affected applicants emotionally was also clear from many of the project descriptions, elaborated on in Section 7.3.5. This finding supports the barriers literature presented in Section 3.3 by providing evidence that elements of the planning process are seen as significant problems, evoking strong responses from the applicants.

From the strength of the statement rankings, issues of consistency and reliability in the planning process evoked the strongest opinions. The most strongly rated statement found 82% of applicants disagreeing with the statement that 'Planning application decisions and advice are consistent between Councils' (Q37). This finding illustrates a complex tension within the English planning system between national and local agendas. Although each local authority's policy must comply with national policy, a review of existing policy (see Chapter 4) shows that there is significant scope for diversity when it comes to heritage

and local policy. While the national push for thermal improvements have been through the Building Regulations, exemptions for heritage buildings means that decisions are made locally using planning policies. The responses of the applicants suggests that there is a high rate of inconsistency in both advice and decisions regarding planning for heritage buildings across Councils. This finding is supported by the subsequent high-ranking statements suggesting that applicants felt strongly that: there were conflicts between planning policies (Q35); application decisions were neither consistent nor reliable (Q37); and planning decisions had more to do with opinion than written policy (Q37). This finding is also supported by the applicant project experiences which highlighted inconsistent advice as the second most highly rated reason for negative experiences on projects.

This discrepancy was identified not only between Councils, but also between officers of the same Council (Q39 and Section 7.3.2). This suggests two different potential problems. First, the English planning system allows Councils to diverge in opinion as long as they comply with national legislation. If national legislation is too vague, this may create substantial differences between local Council policies and result in inconsistent decision-making between Councils. In turn, this inconsistency between Councils may frustrate or confuse applicants, particularly when, as noted from Q7, Q13, and Q19 (Figure 7.14), 60% of applicant projects were located in more than one Council. Second, inconsistent decision-making between officers suggests problems with the clarity and application of both national and local policy and guidance. This potential issue is supported by the highly ranked rating scale statement that decisions are based more on opinion than written policy or guidance.

Therefore, this research identified problems with the consistency and reliability of policy and guidance, the application process, and planning officers. Combined with the previously identified finding that a lack of certainty in policy and guidance documents creates problems for applicants; these results help to explain and detail why planning is perceived as a barrier.

7.5 Conclusions

Chapter 7 has presented research on the perspectives of those who submit applications to better understand the users' perspectives on planning. Key findings of this work included:

- The population of those who submit applications is diverse and impossible to quantify.

- There is potential for more thermal envelope improvements to be incorporated into conservation retrofit projects.
- More research is needed to better understand the intention of applicants to improve energy efficiency, including better understanding what improving energy efficiency means to applicants.
- Local policy and guidance documents are the most commonly used by applicants for these projects.
- Planning advice, application decisions, and the extended time and cost of the planning process have directly led to energy efficiency measures desired by applicants not being implemented.

Specifically in response to the research question, 'Why is planning perceived as a barrier to the thermal improvement of conservation properties?', key findings of this work included:

- There is a perceived lack of integration between energy efficiency and conservation objectives in policy and guidance documents.
- There is a lack of certainty regarding what energy efficiency measures or interventions are acceptable or appropriate for these types of buildings.
- There is a lack of consistency and reliability in the planning application process with regard to both policy and advice, and how it is interpreted and applied, by both Councils and officers for these types of projects.

8 Perspectives of Those Who Assess Applications

This Chapter presents the results of the conservation planning officer semi-structured interviews and the assessor survey. The results of each method is presented and analysed, and the findings are discussed together.

8.1 Interview results and analysis

This section presents the results of the semi-structured interviews with conservation planning officers in four sub-sections. In Section 8.1.1, detailed information about the officers and their LPA is presented to understand the context within which the rest of the results are given. Section 8.1.2 provides data on how the officers perceived their Council priorities for energy matters, and their awareness of energy matters in other Councils. Section 8.1.3 presents the results of detailed and specific questions regarding the thermal improvement of conservation properties. Finally, Section 8.1.4 identifies the specific policies and guidance documents officers use to inform their decision-making, and their opinions about them. The results are presented in a narrative style that illustrates the themes identified through the data analysis (Bryman, 2012; Creswell, 2003). These results are discussed together with the results of the assessor survey in Section 8.3.

8.1.1 Officer and LPA contextual information questions

The first series of questions sought to provide context for better understanding the perspectives of the officers interviewed and how conservation impacted upon the LPA. Questions were specific to the individual officer, to assess their levels of knowledge and experience; and also specific to the Council, to assess the impact of conservation on

applications, and the resources allocated to it. This section analyses and discusses the responses to questions 1-9 of the semi-structured interviews.

Of the 15 officers interviewed, 12 were specifically tasked with conservation assessment of applications, one was a planning officer who dealt with conservation projects, one was a planning policy officer, and one was a sustainability officer. Figure 8.1 illustrates the different job responsibilities of the interviewed officers. There was no instance where a conservation officers' job title was solely 'conservation'.

This diversity in the role of conservation officers was reflected in the background and training of the interviewees. Of the 13 officers who dealt with conservation applications: 10 had education or training in conservation; nine had training in planning; six had training in urban design; four had training in history or archaeology; and three had training in architecture. No officer interviewed had training in only one discipline. This diversity reflects the complexity of working in the built environment and highlights a number of possible perspectives that the interviewees could have taken or represented.

Figure 8.2 illustrates the number of years the officers had been at their current jobs ranging from 0.5-23 years. Figure 8.3 shows their total number of years of work in the building industry ranging from 2.5-40 years. 11 officers had 10 or more years' experience in industry. This suggests that all of the officers interviewed had reasonable knowledge and experience working in the built environment, and many of the interviewees had a substantial amount of experience, making them well qualified to offer their opinions and perspectives on this topic.

During the interviews and from follow-up correspondence, data regarding the approximate total number of planning officers was able to be collected from eight of the 12 Councils, shown in Figure 8.4 The total number of conservation officers was collected from all 12 interviews and is shown in Figure 8.5. 10 of the 12 Councils had six or less full-time officers. In many cases officers split their time between conservation and another responsibility, often relating to their full job title. This implies that the actual number of individuals involved in conservation decisions could be greater than the amount of 'full time conservation officers' indicated. This complexity again reflects the diverse nature of the skills utilised within the built environment and the multi-faceted priorities of the planning system.

Figure 8.1 : Interviewee job titles

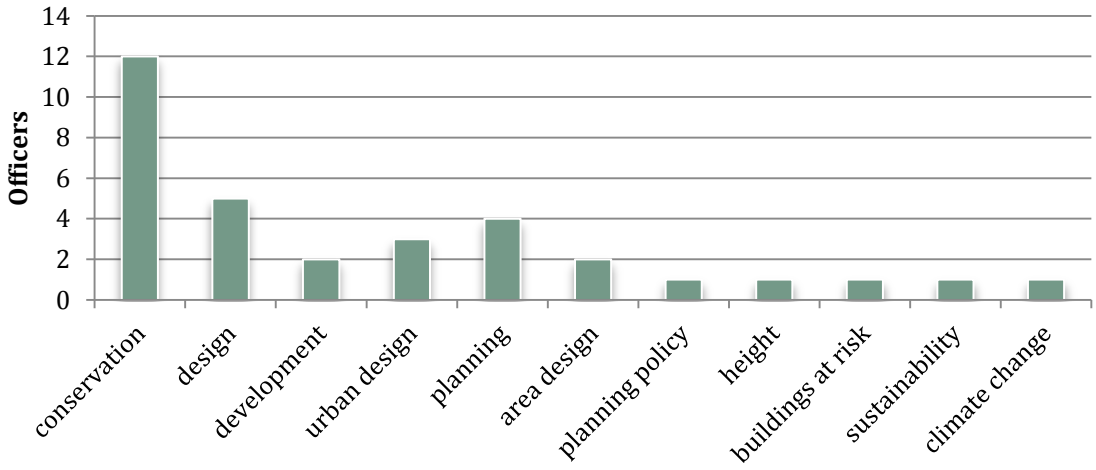


Figure 8.2 : Interviewee years at current post

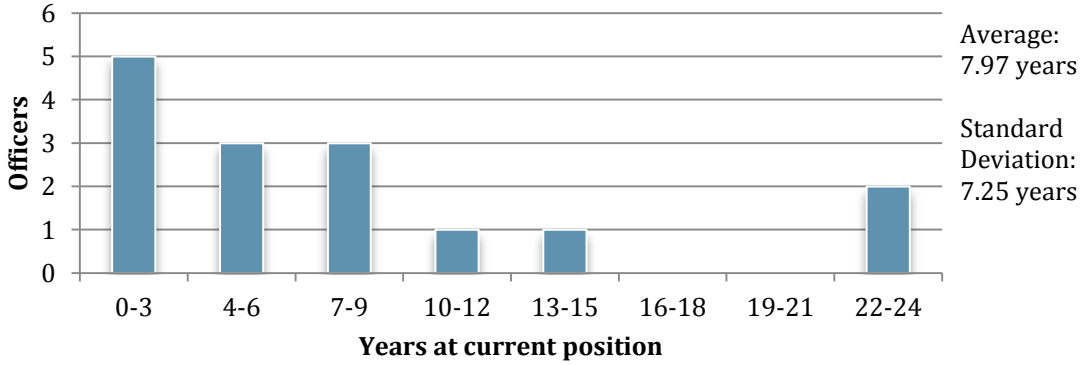


Figure 8.3 : Interviewee total years in building industry

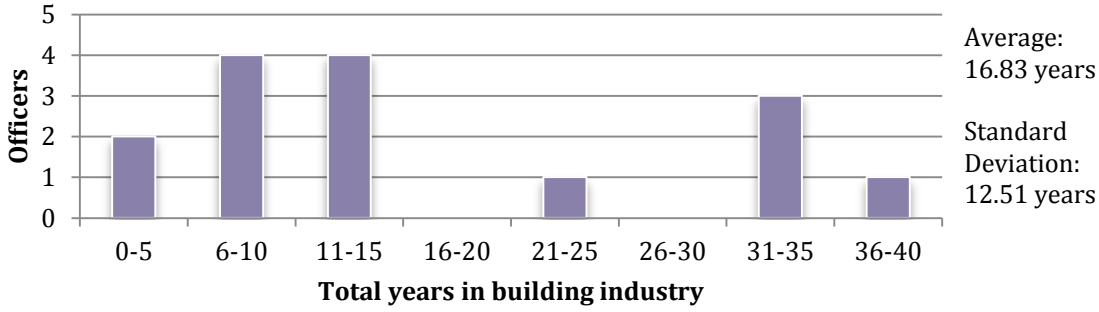


Figure 8.4 : Total number of planning officers in Council

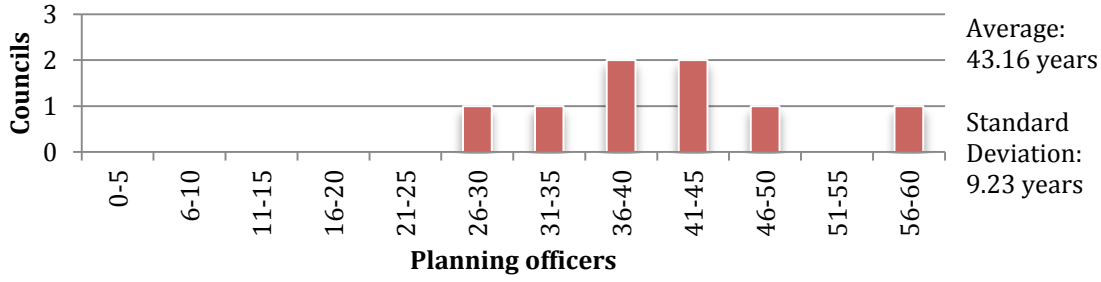
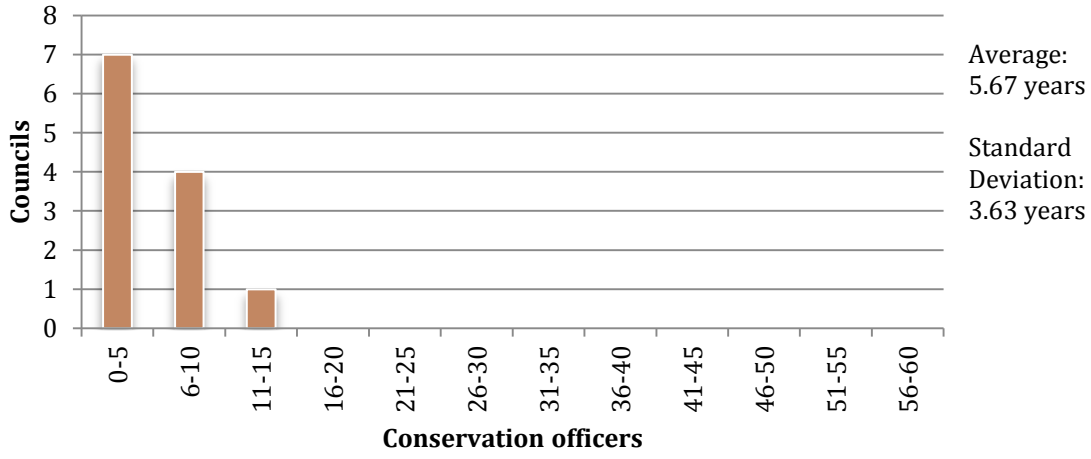


Figure 8.5 : Total number of conservation officers in Council



The resource of conservation officers was intended to be compared to the amount of applications requiring conservation input; however, application numbers were difficult to obtain for all of the Councils. For eight of the 12 Councils, officers provided an assumed or actual total number of planning applications for the year 2010 ranging from 956-12000 applications. However, 12000 was an outlier in the data with a 7500 gap between this and the next data point. Excluding it from the set, the average total number of applications for the remaining seven Councils was 2952 with a standard deviation of 1329. Of these eight Councils, six were able to provide the assumed or actual number of the 2010 planning applications that were referred for a conservation opinion. Three Councils suggested that 'most' or 'around 80%' of their applications required a conservation opinion while the remaining three provided data that suggested 30%, 33%, and 58% of 2010 applications required a conservation opinion. Although incomplete, this information supports the sample selection premise that the impact of conservation affected properties is substantial in urban areas. It also highlights that the percentage of conservation officers does not match the percentage of applications referred to conservation, although more research is needed to understand what percentage of officers is needed.

Officers were asked what criteria were used to determine if an application required a conservation opinion. Ten interviews identified that if a building was listed, located in a conservation area, or affected the setting of a listed building or conservation area, it would require the opinion of a conservation officer. In two Councils with high percentages of coverage by conservation areas, the officers indicated that most projects would be reviewed by a conservation officer to assess potential impact. If Councils had a local list, this was also highlighted by a number of officers as a requirement for conservation involvement. A minor theme amongst a third of the Councils was the lack of available resource to look at all applications that they felt would benefit from conservation opinion.

For example, '*a lot of the smaller applications in conservation areas are dealt with by the development control manager and not the conservation office*' (Officer-5). It might also be the case that, '*If it's quite straight forward then…*[the development control officer] *will just assess the policy or compare the application with the policy*' (Officer-9). Although, '*if they need a second opinion, they would* [still] *come to us*' (Officer-10).

8.1.2 Energy efficiency in the Council and in the city

A number of the interview questions were developed to understand how officers perceived their Council priorities for energy matters, as well as the amount of awareness and knowledge transfer between Councils. Additional questions also sought to examine how well officers were individually informed about energy use in their Borough, and what aspects or properties of the built environment they thought had the largest impact on Borough energy use and emissions. This section analyses and discusses the responses to questions 10-16 of the structured interviews.

In general, all officers felt that energy efficiency was a priority for their Council. However, in one interview it was suggested that it might be overshadowed by other priorities and '*issues like fuel poverty are quite high up politically and so…* [can create a] *real imbalance about how sustainability in its wider sense is looked at*' (Officer-14). Competing priorities was also seen as a challenge in another interview where, '*the conservation of the historic environment is also a high priority so, it's finding the balance between them. I wouldn't say saving CO_2 is more important than saving the historic environment*' (Officer-9). In some cases, political party leadership seemed to have a strong link to the perception of priorities as indicated by one interview where Council control had changed, '*it's still definitely important to what we do, but Councillors have kind of shifted slightly in their principal objectives. Affordable housing has become important, and the sustainability team has been cut quite a lot recently*' (Officer-1). While in a Council where the officer felt the priority was high, this was specifically emphasised by the comment that, '*the Councillors are quite keen…* [and we have] *had Green Party Councillor*s' (Officer-5). Although this was not true in all cases; in another instance, the perception of priority based on the strength of the policy and actions of the officers seemed independent of the Council leadership, '*I suppose we say the right things, now whether you know, in the member's minds it's a priority, that might be not as strong*' (Officer-10).

When asked why they felt energy efficiency was a priority, 6 officers spoke specifically about how sustainability or energy efficiency was integrated into the local policy. Sometimes this was in the context of the sustainability of the Council itself, for example, '*It's talked about a lot and we have policies on the general sustainability of the organisation*

and the sustainability of what we do' (Officer-4). However, the discussion of policy often included wider objectives as one Officer commented, '*It's fairly upfront in our core strategy. And we have supplementary planning documents on energy efficiency and sustainability*…. [and] *as a planning department… it's at the forefront of all of our policy.'* (Officer-10). It was also noted how policy continued to develop, with sustainability being in '*both our existing adopted policy and in our emerging policy… in terms of design, that they should be of high quality and sustainable design and emerging policy is a bit more meat to the bones in terms of … what sort of targets you would be setting for new developments'* (Officer-7). In addition to policy, five officers spoke about the priority for energy efficiency being articulated by having sustainability officers. Some were noted as working on elements of sustainability within the Council, for example, '*any works that are done to things like Council homes are fed into our sustainability team*' (Officer-13). While others were more specific to planning and the built environment, like an Officer, '*whose specific remit is to assess applications for energy efficiency and is putting guidelines on the website for energy statements which should accompany applications*' (Officer-2). Although sustainability officers did not always link to planning and the built environment, in one Council, they '*have sustainability officers but they are not in the planning department. In terms of planning, I mean, there's always a push for sustainability, but we don't have specific officers that would look at that*' (Officer-3).

The following question asked Officers how they felt about the contribution of the existing buildings in their Borough towards their total Borough emissions. 10 interviewees thought that the contribution was 'large', two thought it was 'moderate', two thought it was 'low', and one said they had no idea. They were asked to elaborate on their answer by providing a numeric percentage. 10 interviewees provided percentages ranging from 30-75% with an average of 52% and a standard deviation of 17. Two Officers quoted wider percentages saying, '*that buildings take up 40% they say as a general rule nationally*' (Officer-4) and, '*there is something that says… London's existing domestic buildings contribute 36% of the carbon dioxide emissions*' (Officer-6). Officers talked about different reasons for their estimates including: three who talked about the large amount of old buildings in their Borough; three who mentioned the reduction in transportation emissions due to the lack of personal cars per population and the high use of public transportation; three who cited the intensity of offices, and particularly high-rise offices as a significant contribution towards Borough emissions; two who remarked upon the high density of the built environment in their Borough; and two who noted that there were almost no industrial uses that would generate emissions.

Officers were asked what aspects of the built environment contributed to their thoughts on energy use. Energy demands for heating, and the poor insulation standards of older buildings were highlighted by 13 officers. This was not necessarily remarkable, since all of the interviewees were aware of the purpose of the research, and could have been providing an answer they felt was 'correct'. However, other reasons given included: five comments on commercial uses, plant rooms, and air conditioning; three comments on lighting; three comments on the embodied energy in the material for new construction; and three comments on the behaviour of people who live in buildings including the widespread use of electronic gadgets and how frequently they were plugged in or turned on.

The interviewees generally felt that Borough emissions attributed to buildings were substantial, and they thought the main reason was due to heating. The next question asked what they felt Council's priorities were for reducing energy use or emissions from buildings. Four Officers felt strongly that the Council priority was mainly for new construction performance; three officers commented on the push for energy generation or district heating technologies; and three officers talked about how the focus was on the Council portfolio to meet specific Council emissions targets. Overall, there was no clear trend in priorities. Six officers spoke about minimum standards for new construction using the Code for Sustainable Homes or BREEAM. However, these standards were noted by four officers as being '*all aims and aspirations. I don't think as a Council, where those haven't been met or there have been problems, apart from having the discussion, I don't think we've really ever refused anything on that basis, which you might like to think that if you are taking it seriously that's the sort of thing you might do*' (Officer-10). Although '*if they don't* [meet the standards] *then they tell us and we make them work to tell us why they can't provide or achieve the standards*' (Officer-4). Specifically regarding the thermal improvement of existing buildings, one officer commented on an encouragement for roof insulation and two others on available grants for insulation, although in one case, '*it may not be running anymore*' (Officer-12) and in the other, '*people don't really take it up, I'm not sure why*' (Officer-14).

To complete the theme regarding perspectives on emissions and priorities, the last questions in this section asked the officers what their awareness was of these issues in other Councils and how they thought their Council was performing by comparison. Only three officers felt that had a reasonable perspective of energy issues in other Councils; two because they indicated that they had purposefully asked officers in other Councils what they are doing, and one from a Council that was involved in multi-Council working groups in which the officer participated. Four officers were only aware of the policies and

practices of other Councils that they had worked in previously. Six officers said that although they knew some people working in their area in other Councils, they were unlikely to speak about energy or emissions issues. Four officers spoke about conferences and meetings organised by English Heritage, the GLA, or the IHBC where they may have heard about what was going on in other Councils, either from presentation material or from other attendees. However, five officers said they did not know very much about other Councils at all.

With respect to how well the Council was doing improving the energy performance of their existing building stock compared to other Councils, 11 officers felt that they were doing 'reasonably well'. However, seven officers commented that they did not get many applications; which could be because '*there's a lot of things you can do that don't require consent*' (Officer-6), or '*because of the recession people just don't have the money*' (Officer-2), or because '*it's definitely a secondary issue to most of our applicants*' (Officer-15). Only one officer felt they were doing 'very well' as they reflected that '*every development or refurbishment of a building has that in mind*' (Officer-4). Four officers thought by comparison they were 'not doing that well', either because of the lack of applications, or '*because we say no more often*' (Officer-1) although that can be because the proposals '*are really inappropriate and there are other less intrusive ways of doing it*' (Officer-3). However in those cases, '*we try to work with homeowners to help them* [achieve their ambitions]*... but ultimately for some buildings it's not going to be appropriate*' (Officer-11).

8.1.3 Conservation and energy efficiency

A number of questions were developed to provide insight regarding the interpretation of the term *harm*, used frequently in English planning policy and guidance as a reason for refusal, described in Section 4.2.2. Two approaches were undertaken to investigate this issue; first, interviewees were asked for both *good* and *bad* examples of energy efficient conservation retrofits in their Borough. *Good* examples were intended to explore what could be accomplished without harming a building. *Bad* examples were intended to elicit discussion of what were perceived by the interviewees as *harmful* changes. Additionally, *good* examples provided insight into what local precedents for energy efficient retrofit were available to applicants, and into what improvements were considered acceptable. The second approach was to have detailed discussion on the officer's concerns regarding the thermal improvement of specific elements of the thermal envelope. This section analyses and discusses the responses to questions 17-20 of the structured interviews.

The first question in this section was intended to determine the attitude of the interviewees towards the research subject in order to assess potential bias. Nine officers

felt there was not enough attention given to the thermal improvement of conservation properties by government, researchers, and the media. Four officers felt the amount of attention was about right; and two officers felt that too much attention was given to the performance of these buildings and that better energy savings or emissions reductions could be gained by focusing on other building types and technologies. The 11 officers who felt there was either enough or not enough attention, conveyed a strong opinion of significance to the topic '*because it's not going to go away, it's going to continue to be an issue, and people need more attention given to* … [how to] *make major interventions into existing buildings that are appropriate … and sensitive*' (Officer-1). Another officer noted that, '*I think there is so much focus on it, but it's really, really important and I don't think there should be any less*' (Officer-3). While other officers referred to their personal, as opposed to professional, opinions: '*I generally agree with environmental issues in my personal views. So I am quite supportive of it*' (Officer-5). A number of officers felt that there was confusion surrounding what was appropriate, or what *should* be done and this was where focus was lacking, for example one commented, '*I think it's very difficult to try to arrive at some sort of balance without any sort of guidance*' (Officer-11). This was also mentioned with respect to the complexity for those who submit applications and may not have access to industry expertise, '*the focus on what an everyday person could do seems to be missing*' (Officer-5). These views were contrasted by the 3 officers who felt '*people should be focusing on the stock that's not listed*' (Officer-7) which '*in the overall scheme of things are a very small element of what's out there*' (Officer-8). In addition, '*people like English Heritage and the IHBC are really gearing up for it. Like on their websites, it's something that we can't ignore in the conservation sector. So, I don't think it's too much. I think it's realistic*' (Officer-13).

When asked to provide local examples of *good* and *bad* energy efficient conservation retrofit, eight officers could and seven officers could not think of examples. In some cases, more than one example for a type was provided by an interviewee. In total, eight officers provided 12 *good* examples of which eight were homes, three were offices, and one was a school. Officers seemed particularly aware of projects that had been recognised through independent award schemes, by external organisations, or through media attention. In only two Councils did the interviewees comment on the collection and promotion of exemplar projects from within the Council itself. For the *bad* examples, eight officers provided four specific building examples, but more frequently spoke about types of interventions they were aware of within the Borough and did not agree with. These could be divided into four categories: the visual impact of PV panels or solar tiles, '*there are one or two that have a really big visual impact on the front of the roofs*' (Officer-12); the visual impact of replacement windows, '*I can think of plenty of examples where well-meaning*

owners have put replacement windows in' (Officer-5); non-sympathetic additions to historic buildings, '*lots of extensions don't look quite how you imagined*' (Officer-7); and the removal of original fabric, '*a very historic building had the inside completely taken out in the 1990s which nowadays would not be allowed, but then it was*' (Officer-4). An Officer who could not identify a *bad* example at the interview instead discussed the potential for problems to happen in the future '*like interstitial condensation between what's been introduced and the original fabric, mould growing in cavities behind the plasterboard, dampness. So if there are inherent problems, people might not be aware of them yet … I don't think the test of time is long enough yet to know if there's really bad examples out there… it might manifest itself after 5 to 10 years. It could be a bit of a ticking time bomb*' (Officer-15).

The subsequent questions in this section resulted in detailed discussion of specific concerns relating to the performance improvement of individual components of the thermal envelope for buildings that were listed, in conservation areas, and traditionally constructed. Although traditionally constructed buildings are highlighted by the Building Regulations (see Section 4.2.1) and English Heritage (see Section 4.2.4) as deserving special consideration, most Officers made the same comment, that '*there is no statutory protection for a building that isn't listed, isn't in a conservation area, or doesn't affect the setting, even if it's traditionally constructed*' (Officer-11). Although occasionally Officers indicated they may have some involvement, '*to be honest, on those, it's rare that we would get involved in terms of unlisted buildings outside conservation areas … a case officer may come to ask about it in an informal process … but as a rule of thumb we wouldn't generally be consulted on that sort of application*' (Officer-5). The results discussed below therefore focus on responses regarding listed buildings and conservation areas.

There was consensus amongst the officers about their main issues and concerns regarding the thermal improvement of windows. Many officers made comments that, '*windows are the single most important bit of a façade, because they can change the character*' (Officer-10) For listed buildings, the loss of original fabric was the most important concern and '*we would always be looking to restore or repair original windows as a starting point*' (Officer-5). In cases where the window could not be salvaged, the next most significant concern was the visual appearance of the replacement window; '*if you have to replace it, then it has to look the same as the one you had before*' (Officer-9). This means '*we look very carefully at the detail of spacer bars and sashes and the reputability of the manufacturer*' (Officer-4) because '*it's the frame detailing and the glazing bars that really affect the character*' (Officer-15). This included having material requirements for new window construction; '*if it's a metal window it needs to be a metal window, a timber window for a*

timber window' (Officer-7). There was no consensus regarding whether or not a new window would be allowed to be double-glazed. Depending on the window and the specific circumstances, some officers commented that '*it might be getting the window back exactly the same, keeping the historic glass and putting it back in, basically keeping as much fabric as we can*' (Officer-3) and that '*when they've been replaced* [we ask the applicant] *to try and put back original* [single glazed] *windows*' (Officer-10). Other officers noted that in certain specific circumstances, '*it's not that we wouldn't be amenable to changing them, but we have to consider the significance of the window and if it's an original aperture. You know sometimes when … someone's put in a new window on the side … I might let them put in a double glazed window … because it's not an original opening, and it's not visible from the front elevation. So there would be an element of flexibility*' (Officer-13).

In terms of thermal improvements, secondary glazing was considered appropriate by nine officers, although not in all cases. '*There isn't normally a concern with secondary glazing as long as the glazing bars align horizontally and vertically*' (Officer-15). However, '*that's going to affect the interiors and often the interiors are as important as the external*' (Officer-10) and '*if there's any internal panelling, we usually say no*' (Officer-4). '*We will consider it on a case, on its merits, and it depends on where it's going, what the window reveal would be, etc. If there were very nice shutters inside or something ornate then we wouldn't allow. Really, we'd need to look at the circumstance of each case*' (Officer-5). Officers had mixed opinions regarding glazing replacements to original windows, as this requires removing existing glass. Some were interested in the technology, '*I keep hearing about these new glazing systems which you can keep in a small frame, but no one has ever sent one in. I'd absolutely welcome this if it's true*' (Officer-3). While others were sceptical, for example when speaking specifically about Pilkington Spacia™, '*it's not tried and tested in this cold and damp climate compared to Japan where it's made*' (Officer-15). Additionally, the installation of these technologies caused concern, '*people see the slimlight on TV and they buy into it, but … it's an unproven technology and you know, you also have to use a particular type of putty and apply it in just the right way. What happens in 5 years and someone comes along and uses the wrong putty and then you have a problem '* (Officer-1). As well as concerns regarding the physical implications, '*I'm not happy because it would obviously be a heavier unit*' (Officer-6).

For changes to windows in conservation areas, the concerns were similar and could be summarised as 'loss of fabric' and 'visual impact on character'. However, officers said they would be more lenient because '*in conservation areas we're really only interested in the external appearance of the windows*' (Officer-5). For example, an officer who would not generally consider double glazing for listed buildings said for conservation areas, '*we do*

allow double glazing only where they can have integral glazing bars that replicate the original, if they get too thick we'll refuse it' (Officer-1). There was general agreement that replacement windows should be made from the same materials as the original ones. There were also a number of comments regarding what officers had control over as '*most houses in a conservation area all have permitted development rights but if it's a flat, we have control over the windows, and windows are the biggest issue that always comes up*' (Officer-3). This included the removal of PD, '*in our conservation areas we have an Article 4 because …* [changing the windows] *will have an impact on the character*' (Officer-13). There was disagreement amongst the officers in their opinions regarding the front or 'public' façade and rear or 'private' façade of a building in a conservation area and whether they would be considered similarly. In some cases, officers were open to differences, '*we want to keep the fronts much more distinct as opposed to the backs where there's more freedom to do things. Normally we're more lenient about the back. So we might see double glazed timber on the front and PVC on the back. We suggest there should be consistency but at the end of the day we don't try to control that*' (Officer-2). In others, the distinction was less clear, '*there are many conservation areas, certainly in places that are far more hilly, where the back can be more prominent than the front*' (Officer-15).

While most officers said they had no control over windows in traditionally constructed buildings, this was not true in all cases. One officer noted that, '*we've refused a lot* [of windows] *on design grounds even in traditional buildings*' (Officer-1). While another commented that, '*there are one or two areas that are outside conservation areas that are good Victorian buildings, but I think we'd take the same view as to conservation areas*' (Officer-8).

The second component of the thermal envelope to be discussed was solid walls. Interviewees were asked to give their opinions for both internal and external solutions. For listed buildings, officers agreed that '*the visual impact is the biggest concern*' (Officer-9). Internally, the concern was for the '*significance of the wall lining*' (Officer-13) because '*you could have loss of cornices, decorative features, original skirting boards, and those sorts of things*' (Officer-3). To install internal insulation, '*you would have to cover over* [those details] *or build out*' (Officer-5). A few officers mentioned that with a large amount of detail and specification, '*you could take the panelling off the walls, do the necessary work, and put the panelling back*' (Officer-10) or, an applicant could '*get by with hiding cornices beneath insulation because you are leaving it there for future generations to find*' (Officer-6). However, half of the officers expressed concern regarding how installing internal insulation affects the '*importance of the proportions of the room*' (Officer-13). This included the '*feeling of being in the room and the proportions*' (Officer-6) as well as the impact of

increased depth '*around fireplaces and windows; it would change the character, so we wouldn't be in favour of that*' (Officer-11). Externally, officers generally felt that '*it is very unlikely to be acceptable*' (Officer-5) due to '*how it would relate to adjacent properties, how it would increase the depth of things like window reveals, the soffits; how it works with the original down piping, and all that kind of stuff*' (Officer-13). Material finishes were also a concern, particularly '*in areas that are predominantly brick*' (Officer-10) as '*a lot of the stucco and brickwork is part of the character so if you were applying an external layer to that, you would lose that, and you would lose the features and the proportions*' (Officer-6).

For conservation areas, officers agreed that they had no control over internal alterations, as internal insulation was PD; although some officers expressed a preference for internal insulation in conservation areas for that reason. However, they noted this may not be popular with applicants '*because of the room sizes and … if you're losing a couple of inches on each side it can add up*' (Officer-6). For external insulation, the visual appearance was again the primary concern, as '*our job is to ensure that any proposal preserves or enhances the character of the conservation area so it will be looked at in each case*' (Officer-3). However, opinions were mixed regarding the appropriateness of external insulation on the backs of properties in conservation areas. Although some officers thought that '*you only need planning permission to alter the external envelope where its visible from the public highway*' (Officer-1); therefor, '*we might potentially be less interested in the gardens of buildings in a conservation area, but that's because we believe we don't control it*' (Officer-13). Others commented that particularly for masonry construction, external insulation to the rear would '*show the rest of the terrace in sharp contrast*' (Officer-8), and that '*people live in these properties and you see the backs of buildings and if you have a brick built building then you are changing the character of it by rendering it*' (Officer-5). A number of officers felt there may be scope to be more lenient regarding external insulation to rear façades in conservation areas, '*but it will need to be looked at on a case by case basis*' (Officer-3).

Two additional concerns were raised by a number of officers regarding both internal and external insulation for both listed buildings and buildings in conservation areas. First was damage to the existing fabric, '*it's the fear of doing something that is irreversible, like you might damage the wall forever and you might not be able to remove what you've done*' (Officer-9). Second was '*a real concern for what does that do in terms of the technical implications for how the building performs*' (Officer-1). In particular that these buildings '*were built in a different way, and they were meant to breathe, so there's always those concerns about doing anything that will impact that*' (Officer-3). A few officers noted that '*if they are using materials that are different from those used in the first place then the risk of*

interstitial condensation is a big problem' (Officer-9). This was enhanced by concerns about the technologies themselves, that '*the technology of internal insulation and its impact on the existing fabric of the traditionally built buildings … is not a proven one …* [and] *if you want to go and test this system out … you're talking about more than a year, you're talking about a lengthy period of time*' (Officer-7).

The third component of the thermal envelope discussed with officers was roofs. For listed buildings and buildings in conservation areas, officers agreed that insulation could be placed between the existing joists, and '*if it was inside and there was no external alteration that would be fine*' (Officer-13). Although three officers raised concerns about changes to the building ventilation and possible harm resulting from '*condensation or damage to the structure*' (Officer-9). A number of officers commented that many historic terrace properties in London do not have enough clearance to insulate underneath the existing roof, due to the London Roof[8] typology. They raised two main concerns when discussing insulating above the existing roofline. First, the visual impact of the change in roofline was highlighted by the majority of officers. Specifically, concerns were raised about the impact of increased thickness to the existing roof, '*because you'd have to look at the soffit walls, the chimney stack, and the proportion of the roof elements*' (Officer-15). Additionally, 10 officers commented on the negative visual impact to a continuous terrace, because '*if you've got a row of terrace and you can from the back read this unbroken roofline, and then someone does something where you could see that they've done some work, even in the back garden and private views, because it's about getting a sense of the group as a listed structures, you know, and the relationship to each other*' (Officer-1). Second, concerns were raised about the removal of historic fabric. In terms of materials, officers noted that '*slate, which has a natural life anyway, could be replaced with slate. But if there was tiling we would definitely want to keep the original tiling*' (Officer-10). However, in cases where a raised roof would not be visible or the difference in thickness would be minor, officers suggested that if '*you take the slate covering off, you lift the roof, …* [insulate] *and then re-slate it, I think you've got to give that consideration*' (Officer-7).

The fourth and final component of the thermal envelope discussed with officers was the ground. For buildings in conservation areas, officers agreed this was outside of their control, and might only come to their attention if a basement was being created, or made deeper for additional space. For listed buildings, nine officers had minor concerns

[8] A traditional London roof form where the roof is constructed in the form of a 'V' and where the central gutter is at right angles to the front raised parapet, which hides the roof. This roof has no ridgeline as the party walls rise above the highest part of the roof. This form is often expressed at the rear of the property as a 'V' shaped butterfly parapet. (Westminster City Council)

regarding the loss of original fabric but generally felt that '*if you pulled up the floor to insulate underneath and put down the original floor I don't think we'd have any problem, as long as they kept the proportion and it didn't impact the structural integrity of the building*' (Officer-11). For suspended timber floors, there were some specific concerns. For example, '*sometimes the older floorboards are nailed down with a particular type of member so that taking them up can be very problematic, and they may be very wide, and they could be damaged if they're lifted up and down a lot*' (Officer-13). One officer also noted that, '*adding insulation to a raised timber floor is fine in theory …* [but] *5 to 10 years down the line, you have unintentionally blocked the cross ventilation, and then you have dry rot and you may lose the fabric*' (Officer-15). Two officers brought up archaeology related concerns if digging had to occur in order to insulate, although '*we get them to do a method statement to cover the archaeological impacts*' (Officer-4). Two officers commented on their experience with applications for dry lining due to a high water, but '*it's not reasonable to refuse it … I see insulation as more of a desire whereas damp proofing is different because … it's trying to remediate a defect*' (Officer-5). It was significant to note that a third of the officers commented that they had never had an application for ground insulation.

8.1.4 Legislation and guidance

The last section of interview questions focused specifically on the policy and guidance officers use to inform and make their decisions, and what they thought about it. The aim of these questions was to better understand how policy and guidance were used by those who assess applications, where it was working well, and where it could be improved. This section analyses and discusses the responses to questions 21-25 of the semi-structured interviews.

The first question asked officers what policies and legislation they used to make their decisions. Figure 8.6 shows what specific policies or legislation were mentioned at the 12 Council interviews. While a number of policies were mentioned, national policy was mentioned at all of the interviews. As the interviews spanned the 2012 change to the planning system, those that took place before the change cited PPS5, those that took place after cited the NPPF, and two that took place close to the time of transition mentioned both. One officer was less specific saying, '*national policy is going to change isn't it? You don't know where to look at the moment so I'm not going to mention that*' (Officer-4). The second most common mentioned were local policies, at 11 of the interviews. This included policies taken from the Council UDP, Core Strategy, LDF, and local plan. The London Plan was only mentioned as relevant at half of the interviews.

Figure 8.7 illustrates the diverse sources of guidance mentioned by officers during the interviews. English Heritage was mentioned as a primary source of guidance at all of the interviews. As one officer noted, '*they have 120 odd people churning out information and guidance*' (Officer-15) and '*there's a whole raft of English heritage publications that you tend to dip into on specific topics*' (Officer-10). At eight interviews, officers spoke about using guidance produced by the Council itself including Supplementary Planning Documents (SPDs). Officers spoke about different types of information sources. These included: publications and websites that officers could look up when needed; conferences hosted on specific topics, for both the information and networking provided; presentations by manufacturers regarding their products; and accreditation schemes to provide confidence that applications had been prepared by qualified professionals.

Figure 8.6 : Policies and legislation mentioned in interviews by Council

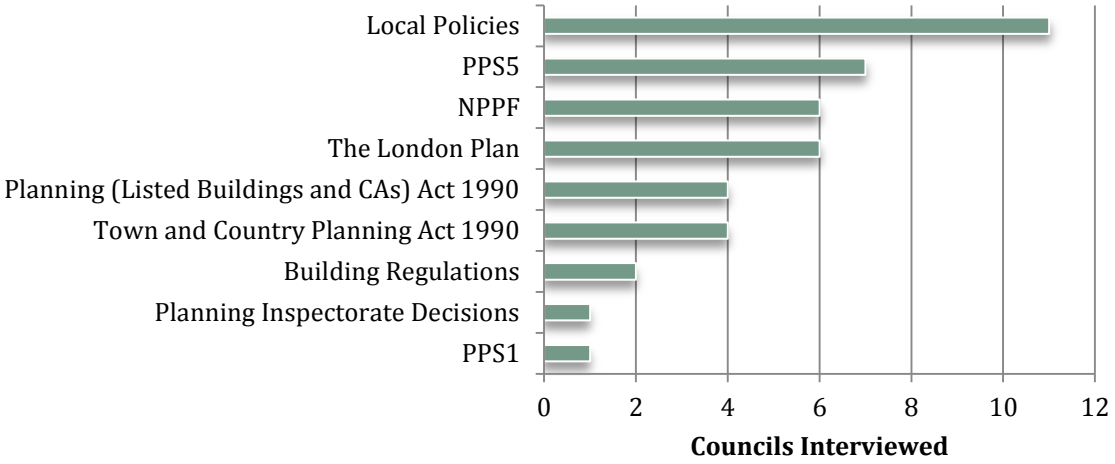
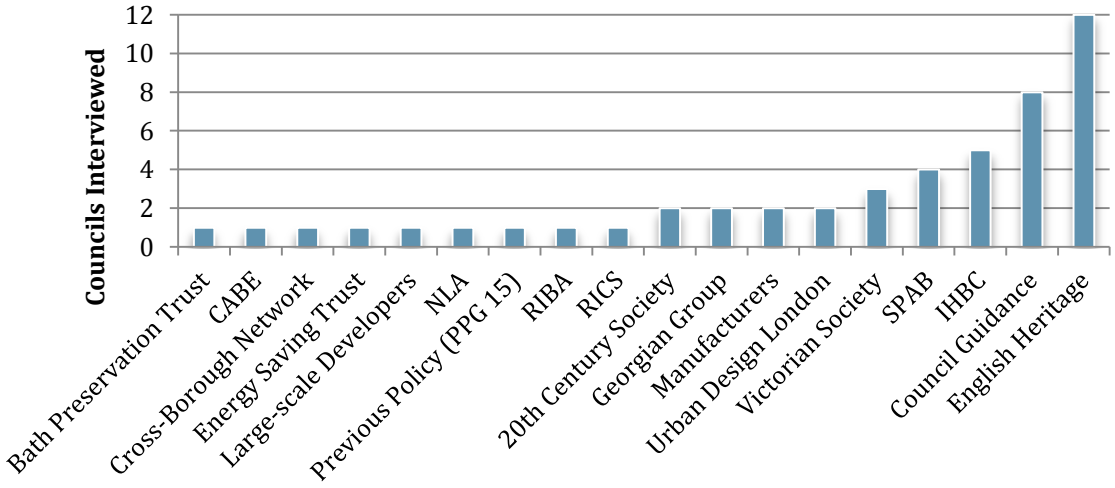


Figure 8.7 : Sources of guidance mentioned in interviews by Council



The subsequent questions asked officers to discuss their opinions on the amount and usefulness of the policy and guidance available for helping them to make decisions. When speaking about policy, nine officers felt there was not enough policy, four felt there was the right amount, and two felt there was too much. The reasons for these answers were diverse. For those who felt there was not enough policy, five officers spoke about the lack of priority, '*I do think there is muddiness over what the priority is from government .... it's not up to me to balance whether heritage is more important or less important than climate change*' (Officer-6). This was emphasised by two officers who spoke about the conflicts in policy, '*there is this fundamental conflict between our traditional understanding of conservation and ... something that's going to make them look quite different. So this is why I think more direction from central government is needed. You know, do we need to move from our perception of what conservation is to something that has more sustainability*' (Officer-12). Another officer expressed their dissatisfaction by explaining that, '*a strong*[er] *policy removes the need for interpretation*' (Officer-9). Conflicts were also noted between different legislative bodies by two officers, for example, '*we had the case where one of our building control surveyors was telling people in a listed building that they had to put in wall insulation and so you know, actually, you need consent and it wasn't forthcoming. So obviously there are conflicts always with everything*' (Officer-1). Additionally, three officers commented about their dissatisfaction from the reduction or lack of controls, resulting in harm to the historic environment, '*making more things not require planning permission ... a lot of that now is taken out of the planning system in the sense that it's permitted development '* (Officer-8).

Although four officers felt there was enough policy, only two of those expressed overall satisfaction. For example, one noted that although they felt the policy was adequate, '*detailed information on how to interpret that policy or balance the competing issues,* [is] *probably not* [good enough]' (Officer-11). Another noted that although they felt there was enough policy, there were still conflicts between different policies. The two officers who felt there was too much policy expressed feelings of being overwhelmed, '*I think there's quite enough actually. There's so much stuff that we have to do. So many circulars, policies, agendas, that all have to be addressed. It's extremely complex and getting more complex even though everyone says they want to simplify*' (Officer-7).

The change to the national planning policy concerned officers, both those interviewed before and after the change. Those interviewed before the NPPF took effect expressed that, '*we're all concerned. I'm not sure that they can put everything in to such a short document*' (Officer-4). They felt this could mean that '*it will be more complicated for the planner to justify or control what is happening*' (Officer-9) Additionally, the impact on local

policies due to the change was a concern because, '*there isn't really up to date documents at local level*' (Officer-5). Once the NPPF took effect, interviewed officers commented that, '*until everyone gets used to it, it will have a negative impact. Because it's up to the individuals to interpret it, a lot of conservation officers will be interpreting it in lots of different ways. So until it goes to inquiries and appeals, and these things are two years down, it's going to start delaying things*' (Officer-10). Additionally, '*the focus is being put on Councils to generate their own specific policies, rather than the government having the overarching policies, and I think that's quite harmful. I don't think it's good enough now. It's going to cause a lot of disparity in terms of how Councils choose to deal with the issues*' (Officer-13).

In general, the discussion of policy emphasised the importance and influence of the guidance used to interpret policy. When asked to comment on the availability existing guidance, officers were split with eight saying there was not enough, six saying there was enough, and one who was not sure. However, 12 officers then commented on topics they felt were lacking or difficult to understand from existing guidance. Eight officers spoke about desiring better information on '*what could be done and what are the impacts*' (Officer-13), and that in particular, '*it would be useful to have a comparison of what can be achieved by what measures*' (Officer-6). This included a desire for actual examples, '*I would like more case studies …* [showing] *what can be done in this sort of context*' (Officer-4). As well as information on specific materials and technologies, '*it would be good to know what products there are that you can use on these sorts of sites*' (Officer-3). Six officers felt their job would be improved with more explicit guidance, particularly from government, '*there's quite a lot of guidance out there but I think* [it's difficult to] *… identify which issue has priority*' (Officer-6). Although they equally understood this was a challenge as '*guidance by its very nature is generic … and it's trying to give a simple message without giving the wrong message*' (Officer-7). However, without direction, '*you get one Borough doing one thing, one Councillor saying something else and there's a lot that could be done based on the opinion of the person … I just think it would be better to think about it now, and make a national opinion*' (Officer-3). Five officers commented on having problems with the way information was delivered through guidance, '*it's technical and it's not easy to go through*' (Officer-8). This means '*your average planner just can't really. You read the information and you're just like, well, I can't try to pretend to read and understand that*' (Officer-5). In addition, individual comments were made on a perceived lack of guidance: specifically directed towards urban and non-residential buildings; on how to measure and incorporate embodied energy into decision-making; and for managing the cost implications of thermal improvements to conservation properties.

The final question of the interviews focused on what officers felt they needed; asking them to consider what policy or guidance would make their job easier, and who should produce it. The most frequent suggestion was given by eight officers who felt that what they needed was a clearer priority from government saying, '*it would be good to know what the Government stance is on eco-efficiency and historic buildings. Because they just, you know, it's really sort of wishy-washy. It's very difficult. On the one hand everyone is saying you need to make buildings energy efficient, but on the other hand, you get another set of rules that's very, like, you know, you can't get rid of any historic fabric '* (Officer-3). It was also clear that most officers felt this direction '*should be national because all the Councils need to work to the same, no, everyone needs to work to the same set of rules, that's what causes problems, that different Councils interpret things in different ways*' (Officer-6). However, one officer took a different perspective, agreeing that clearer direction was needed, but feeling it should come from the Council as, '*it's all about making policy within an established framework that's probably not going to change massively any time soon. So we've kind of taken this sort of view and will put forward what works for us*' (Officer-1). Similar to this issue, two officers expressed it would be good to have clarity from government regarding what is allowed because, '*certainty is what owners and developers want really, and yeah, planners too*' (Officer-8). Relating to improving clarity, one officer felt what was needed '*were better, easier ways to measure visual impact*' (Officer-10) Overall, officers were split over whether this clarity would best be delivered through policy or guidance, although one officer felt strongly that, '*what is needed is policy driven because guidance follows policy*' (Officer-15).

Six officers expressed opinions that both policy and guidance should be made more holistic; and that currently perceived biases, and conflicting advice, should be eliminated. They suggested partnerships between conservation and energy organisations, because currently, '*each puts forward what they want and you don't get truly independent advice*' (Officer-2). English Heritage was cited as the organisation that should represent conservation interests, however, there was no consensus regarding who would be best suited to represent energy efficiency issues. Regardless, emphasis was on collaboration because then, '*the result would not be challenged because it …* [would come from both] *preeminent research and conservation organizations*' (Officer-8).

Six officers felt that they would particularly benefit from, and that there was a lack of, pilot and exemplar projects saying, 'I would like more case studies about what can be done in this sort of context because I find a lot of the current guidance very difficult to use' (Officer-4). However, to instil confidence, these projects would need to be carried out by reputable organisations and be 'good quality case studies which have, you know, been

properly tested, be more than six months old, they've been there for five or ten years or where you really start to understand what they achieve and what they really deliver. And I think you need to choose a cross section of building types' (Officer-7).

Three officers reiterated the difficulty of using technical guidance saying, '*a planning officer does not have to have the knowledge, the technical knowledge, about the energy part of the retrofitting*' (Officer-9). To address this, one officer suggested that, '*formal training for conservation officers would be good*' (Officer-11); and also that, '*there ought to be some better technical guidance, produced by someone who knows the historic environment … and* [showing] *how that's viewed within a conservation context and how we can reconcile the conservation of the historic environment while promoting energy efficiency*' (Officer-11).

Two officers felt they needed a single place to find out about what technologies were available and how they perform saying, 'it would be really good for the government, or through English Heritage, to issue guidance on the types of products that are out there, so … you know that there are actually ones that are less interventionist or harmful but that can still get the same U-Values' (Officer-3). This incorporated a desire for more evidence on performance; 'it would be nice if English Heritage were to do more research into these sorts of things to look at the impacts on buildings of different products and suggest ways forward while at the same time meeting the standards that the current regulations are looking towards' (Officer-2).

Three additional suggestions were raised by individual officers during the discussion of this final interview question. The first was to allow for more statutory time to assess projects, '*because projects have limited timeframes and it's a lot of pressure from our point of view to make sure we've assessed everything*' (Officer-13). The second involved incorporating embodied energy calculations into energy assessments, as '*when I ask about refurbishing it they say they won't get any points for that … it doesn't count towards their emissions targets*' (Officer-12). The third was to provide more guidance and support for implementing national policy at the local level, as one Officer commented, '*there's no support, enough support, to the local authority as to how to implement these policies, … no one is planning to help us with how you put this into practice*' (Officer-9).

8.2 Assessor survey results

This section provides details of the most significant findings of the assessor survey. The full results of the survey can be found in Appendix I.

The first and sixth set of questions asked for information on the individuals taking the survey and about their LPA. Respondents came from 27 different authorities (Q2). These

authorities had from 3-60 planning officers with an average of 22.5 (Q3), and their conservation teams were made up of 0-18 officers with an average of 2.9 (Q4). Figure 8.8 shows the roles undertaken by the assessors who completed the survey (Q5). Of the 32 respondents, the majority identified that they took on the roles of conservation (15) and development control (14) officers. Four assessors identified themselves as having more than one role.

There was a large diversity in the assessor experience, with time at their current job ranging from 0.5-40 years with an average of 8.9 and a standard deviation of 9.0 (Q6). Their total years involved in industry ranged from 1.5-40 years with an average of 14.2 and a standard deviation of 11.4 (Q7).

The second set of questions asked assessors for their opinion regarding the priority for, or promotion of, energy efficiency measures by their authority. Only slightly more than half of the respondents felt that carbon emissions and energy efficiency were a priority as illustrated in Figure 8.9 (Q8). 18 assessors provided examples of why they felt this was a priority (Q9). The three most common were: it was an overall agenda for the authority; it was expressed through the improvement of the Council's own properties; and, it was explicitly in policy. Figure 8.10 shows the other examples and reasons provided.

The majority of assessors felt that their authority was doing alright compared to other local authorities with respect to energy efficiency measures, as illustrated by Figure 8.11 (Q12). Although only 3% of officers felt that their authority was setting a leading example; and almost a quarter felt that their authority was lagging behind.

Figure 8.8 : Role of assessor survey respondents

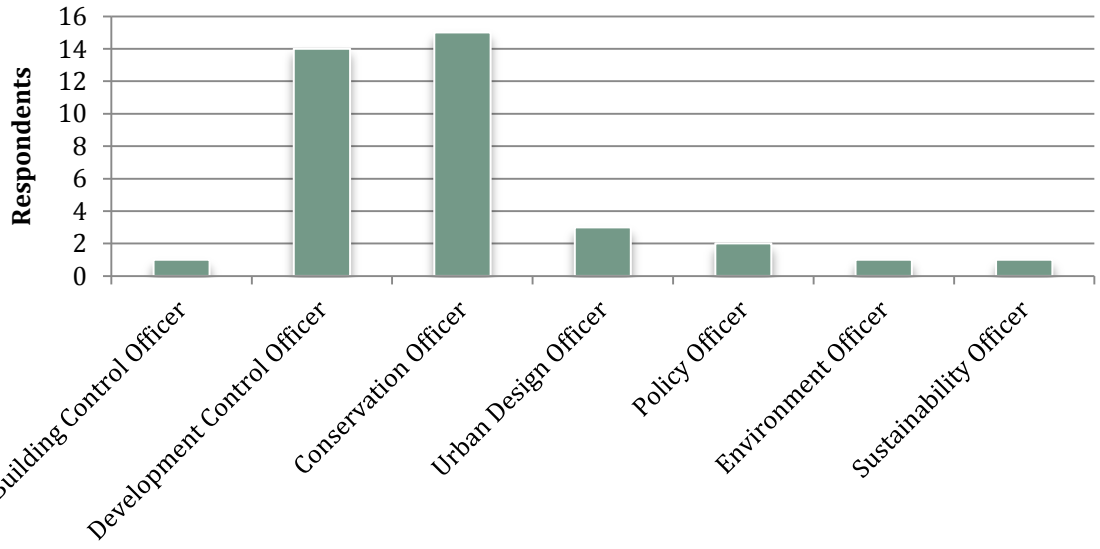


Figure 8.9 : Assessor opinion on Council having a priority for energy efficiency

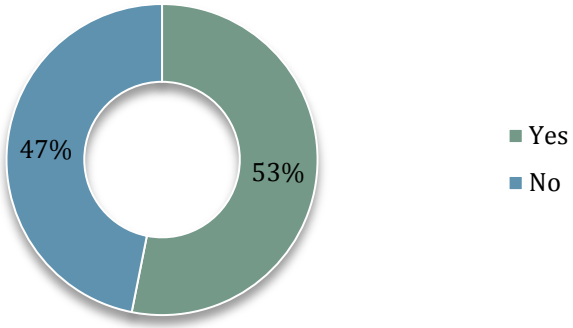


Figure 8.10 : Reasons and examples demonstrating priority

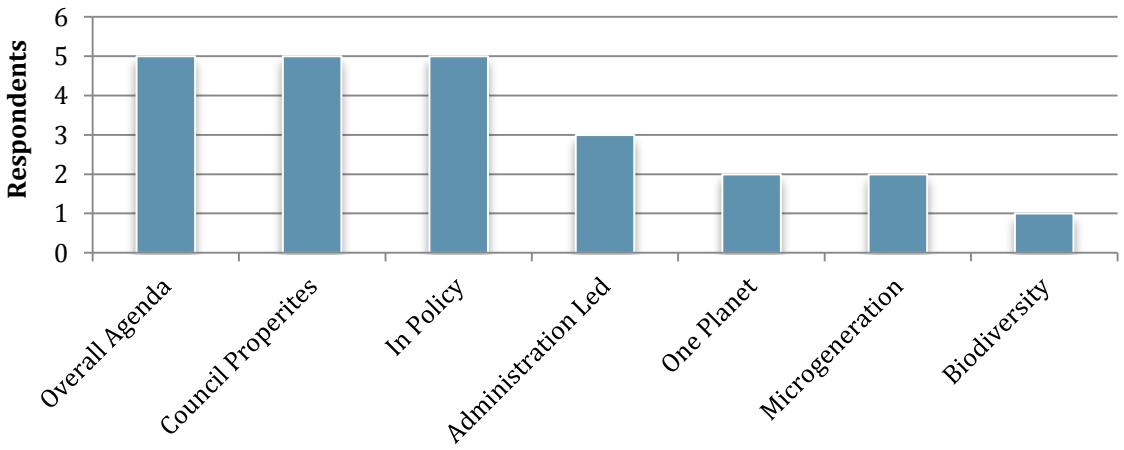
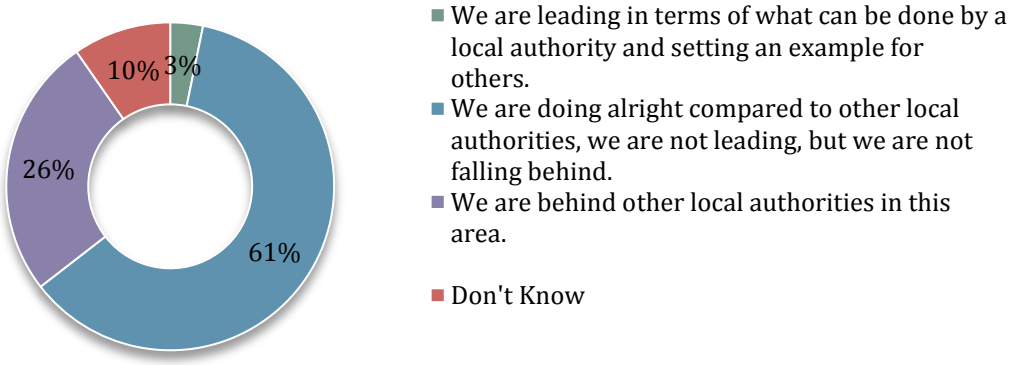


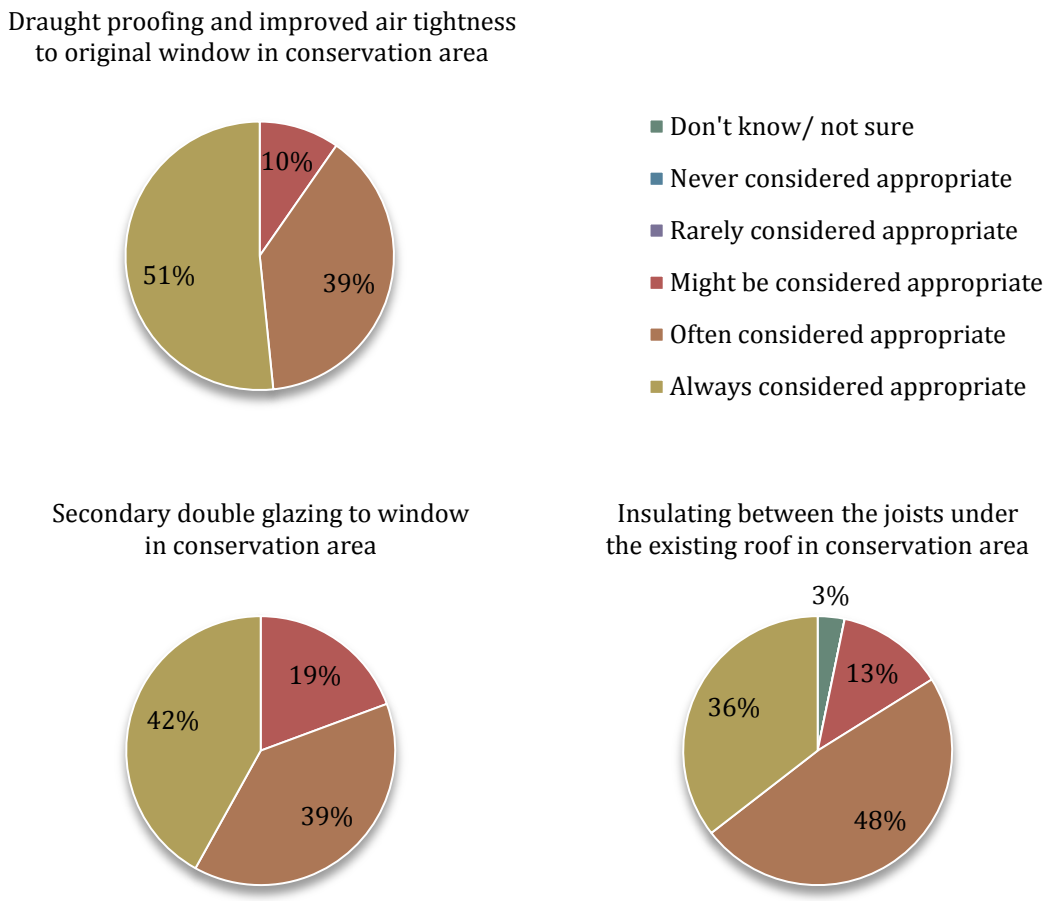
Figure 8.11 : Assessor opinion of authority energy efficiency measures comparison



The third set of questions looked at specific thermal envelope improvement measures and how acceptable they were to assessors for both listed and conservation area properties. Specific measures were provided for windows (Q14, Q15), walls (Q18, Q19), roofs (Q22, Q23), and the ground (Q26, Q27). The measures considered the most appropriate, as illustrated by Figure 8.12, were: draught proofing and improved air tightness to original windows in conservation areas; and, secondary double glazing in conservation areas. The measures considered the least appropriate, as illustrated by Figure 8.13, were: external wall insulation to listed buildings; and, digging out basement levels and removing any original flooring to insulate at ground in listed buildings. In general it was observed that there was notable diversity in how assessors viewed individual measures; and clear differences between the perceptions of the same measures for listed or conservation area buildings.

45% of the assessor respondents said their opinion on the appropriateness of measures for windows would change depending on whether the window was located on a public or private frontage (Q16). The 14 assessors who said their opinion would change noted that this was not for listed buildings, but specifically for windows in conservation areas and

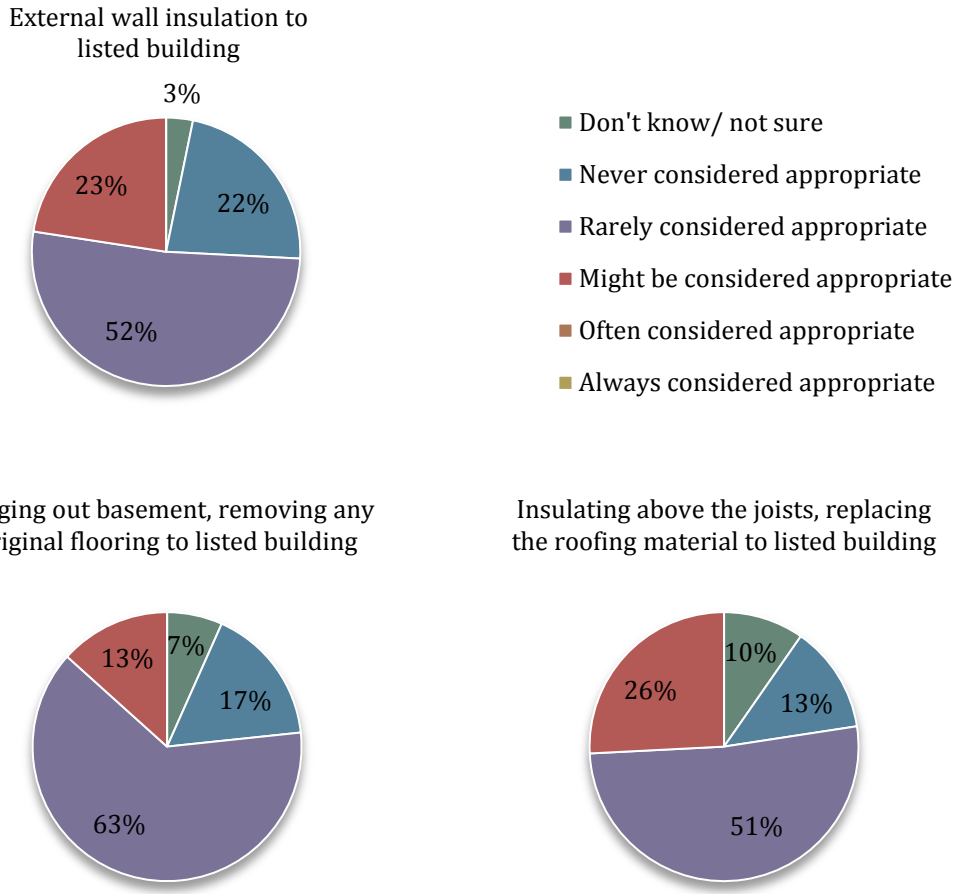
Figure 8.12 : Improvement measures assessors surveyed found most appropriate



'*the visual impact from public viewpoints*' (Q17). There were some differences in how assessors indicated policies impacted these decisions. Some assessors noted that they did not have control over non-public facing windows as, '*many single family dwelling houses in conservation areas enjoy Permitted Development Rights and most Article 4 Direction these days only control front elevations*' (Q17). While others commented that '*we maintain a requirement to retain original windows on all elevations, on both listed and unlisted buildings, where they are capable of repair*' (Q17).

For wall insulation, 58% of assessor respondents said their opinion on appropriateness would change depending on if the wall was located on a public or private frontage (Q20). Again, in the comments, it was clear that this applied to opinions about conservation area buildings only (Q21). In particular assessors felt more leniently towards rear elevations that were '*stucco and roughcast/pebbledash ... since these coverings need to be renewed ... on a regular basis*' (Q21). However, a couple of assessors had issues with attached properties saying, '*we have real concerns about the visual impact of external insulation to a mid-terraced property, where the consistency in appearance of the terrace frequently contributes to the character and appearance of the conservation area*' (Q21). Others

Figure 8.13 : Improvement measures assessors surveyed found least appropriate

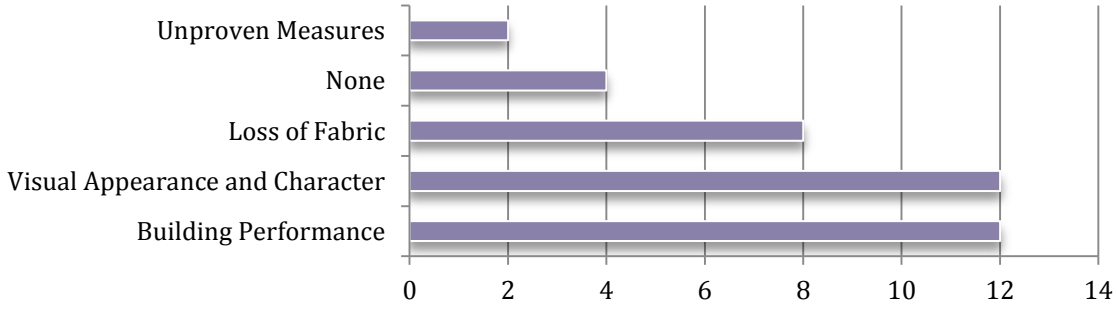


highlighted concerns about building performance noting that, '*great consideration must be given to how the building fabric performs to ensure that breathability of buildings is maintained*' (Q21). Similarly to windows, the impact and extent of existing policy for wall insulation was unclear; as two Officers said that, '*for a building in a conservation area yes, as there is no planning control there*' (Q21).

Q28 asked assessor respondents what their biggest concerns were when considering energy efficiency improvements to conservation properties. The text-box responses were coded, and the results are illustrated in Figure 8.14. The two biggest concerns were that applicants '*consider an appropriate ventilation and moisture control strategy and undertake measures with care not to damage existing fabric*' (Q28); and, should avoid '*impact upon historic detailing and character, particularly where that character is publicly visible*' (Q28). '*Loss of the historic fabric of the building*' (Q28) was also a common concern, and particularly '*loss of original timber windows*' (Q28). Two assessors also expressed concern that, '*the long term benefits of the proposed works on the fabric and character of the building have often not been properly thought through*' (Q28).

The fourth set of survey questions were made up of 20 rating scale statements taken from the applicant survey regarding planning policy (Q29), the planning application process (Q31), and planning officers (Q33). Assessors were also given the opportunity to expand on their answers or add additional information to these topics in optional open-ended text boxes (Q30, Q32, Q34). Results of the rating scale statements were again plotted using the diverging stacked bar chart method (Robbins & Heiberger, 2011). The individual statements were combined and put in order of percentage agree and disagree, splitting the neutral category between them as illustrated in Figure 8.15. Six statements were over 75% agreement and three statements were over 75% disagreement.

Figure 8.14 : Assessors' concerns regarding energy efficiency improvements

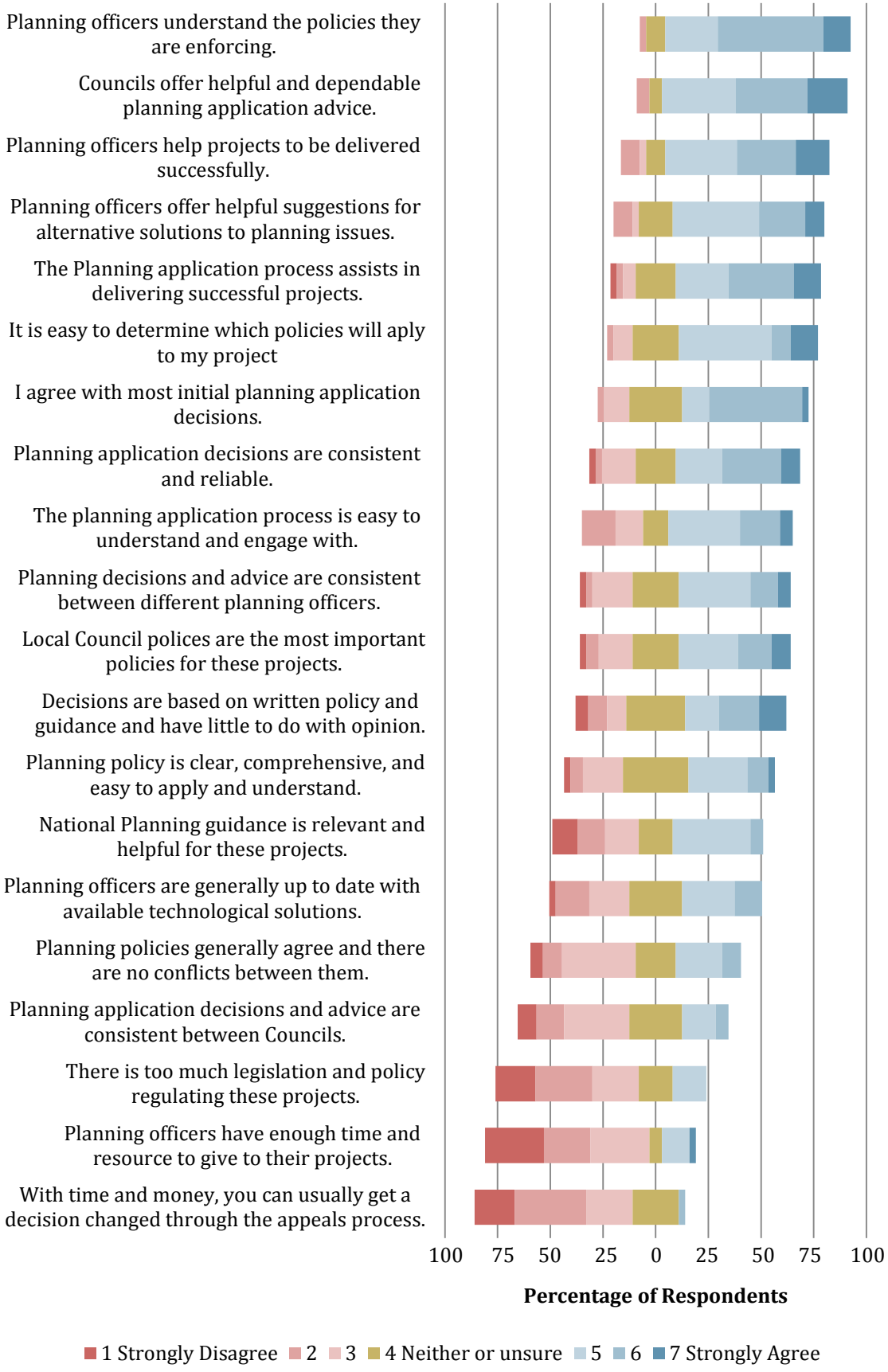


The statement with the highest agreement came from Q33, 'Planning officers understand the policies they are enforcing'. There were no specific comments about this topic in the follow-up text boxes. This response suggests that the assessors who took the survey feel confidently about the parameters of their jobs, as they were likely to be thinking of themselves when rating this statement.

The next four statements with the highest agreement percentages all had to do with the perceived helpfulness and benefit of the planning process and of planning officers. This included the agreement that 'Councils offer helpful and dependable planning application advice' (Q31) and that 'The planning application process assists in delivering successful projects' (Q31). There was agreement that 'Planning officers help projects to be delivered successfully' (Q33) and that 'Planning officers offer helpful suggestions for alternative solutions to planning issues' (Q33). One assessor noted in the comments that the planning application process was important as, '*it is the only mechanism for balancing and airing the competing material impacts of development proposals*' (Q32). Interestingly, the majority of the text-box comments tempered the positive response from the statement rating by highlighting perceived problems. For example, two assessors commented on the interference of Planning Committees, saying that problems arise due to decisions being '*made not by skilled officers, but by untrained and easily persuaded members*' (Q32). One assessor commented on challenges arising from the '*inherent contraction between the localism agenda and a centralised planning appeals process and also between localism and trying to achieve national goals*' (Q32). While another commented on problems due to '*cuts in recent years …* [which] *has left existing* staff with increased workloads and less time to devote to projects' (Q34).

The sixth statement with the highest agreement was, 'It is easy to determine which policies will apply to my project' (Q29). However, this was also contrasted by some of the comments which included an assessor who has '*found difficulties in knowing how much weight to give to certain national policies where their aims and objectives conflict with one another*' (Q30). Another assessor noted that '*the NPPF has lost so much of the detail that was previously important that clear local policies have become more important than ever*' (Q30), although a different assessor noted that for them, '*specific local policy is absent*' (Q30). However, this was not a view held by all assessors as another noted that, '*decisions should be made in accordance with the 1990 Act and NPPF not Local Plan policies*' (Q30).

Figure 8.15 : Assessor rating statements sorted by percentages



Assessors most strongly disagreed with the statement that, 'If you have enough time and money to pursue it, you can usually get a decision changed through the appeals process' (Q31). This statement was clearly rejected by the assessor respondents. The second statement most strongly disagreed with was that, 'Planning officers have enough time and resource to give to their projects' (Q33). This reinforces the previously noted comment regarding budget and staffing cuts to planning departments. Finally, the third most disagreed with statement was 'There is too much legislation and policy regulating these projects' (Q29). Many of the comments on legislation reinforced this by commenting on a perceived lack of policy, both at the national level, '*I preferred the detail previously contained in PPG15*' (Q30), and at the local level , '*it is unlikely local policies … have caught up with* [changes to national policy]' (Q30).

The fifth set of questions asked about which policy (Q35) and guidance (Q36) documents the assessors used and thought were most helpful. Assessors were allowed to list up to five documents for each category. The policy results are illustrated in Figure 8.16. Local policies were identified as the most significant, followed by the NPPF. With regard to guidance documents, English Heritage guidance was identified as the most significant, as shown in Figure 8.17. Council guidance was identified as the second most significant, and the NPPF, although a policy document, was identified third as an important guidance document.

13 assessors responded to the optional Q39 which asked for them to suggest a new policy or guidance document that would help improve energy efficiency while maintaining cultural heritage. Seven assessors spoke about desiring better national policy or guidance '*specifically on energy efficiency and historic buildings*' (Q39), to '*give more cohesive decision making across the country*' (Q39). This could include '*case studies of best practice*' (Q39), '*some quantitative analysis of the potential scope for CO_2 reductions in order to get a sense of proportion and priorities*' (Q39) or, '*a policy that can be relied on for decisions, appeals and enforcement*' (Q39). However, it is worth comparing this response to the results of Q37 which asked assessors how they felt about the change to the NPPF as shown in Figure 8.18. Although assessors expressed dissatisfaction with national policy and guidance, 7% of respondents felt the NPPF improved their decision making and 57% of respondents felt that the NPPF did not impact their decision making at all. Only 23% of respondents felt that the NPPF negatively affected their decision making and lengthened the application decision process.

Figure 8.16 : Most significant policies identified by assessors

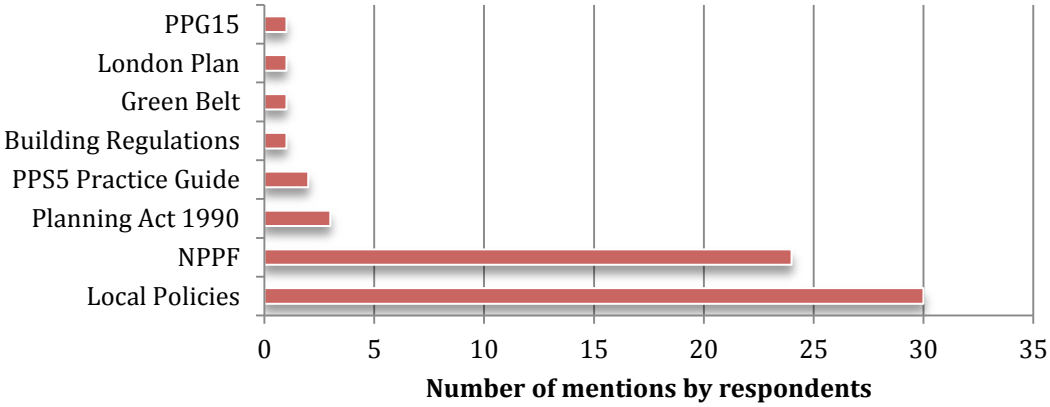


Figure 8.17 : Most significant guidance documents identified by assessors

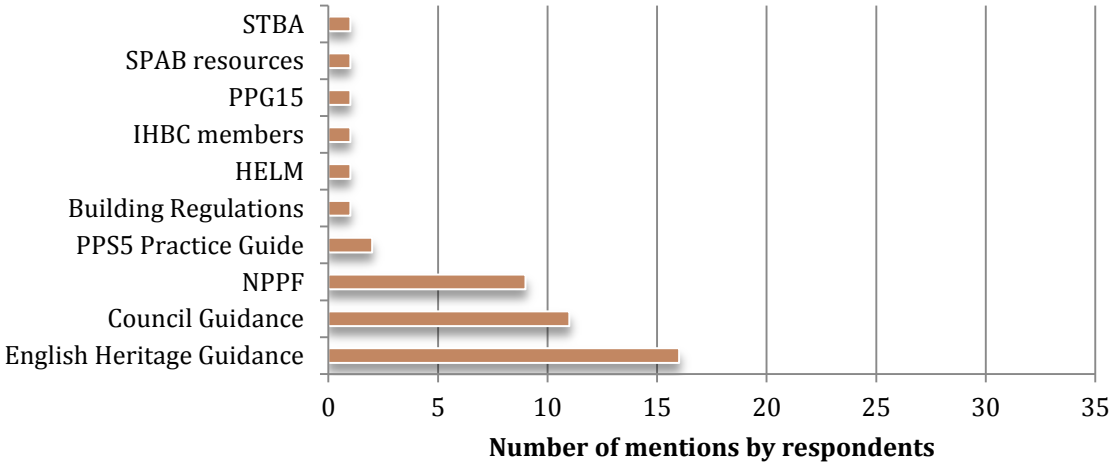
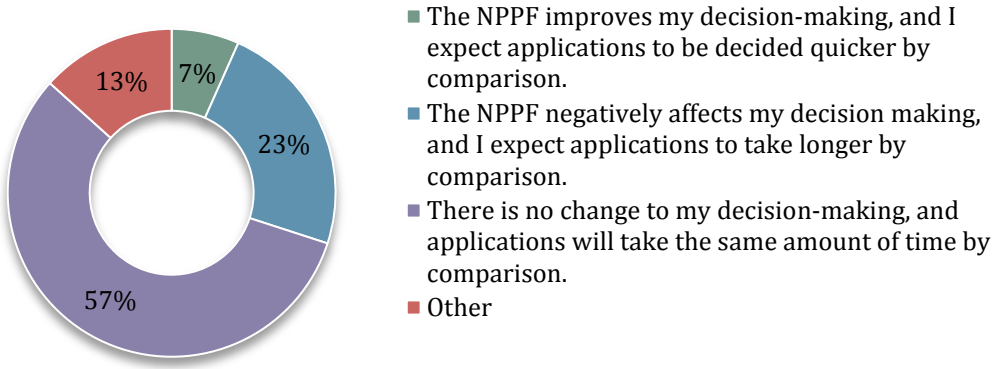


Figure 8.18 : Officer opinion of the effect of the NPPF



Other suggestions raised by more than one assessor in Q39 included: creating '*a good central repository for information*' (Q39); incorporating '*the issue of embodied energy*' into measurements (Q39); and, the development of more holistic guidance, perhaps '*provided by an impartial third party*' (Q39). Overall, there was no consensus regarding what assessors felt they needed or wanted; and in some cases by comparing different question results or individual responses, it was clear that some assessors held opposite opinions.

8.3 Discussion of assessors' perspectives

The conservation officer interviews and assessor survey sought to understand why planning was perceived as a barrier to the thermal improvement of conservation properties. This section combines and discusses the results of the interviews and survey, and identifies key findings and areas for future work. It does so by examining the context from which the assessors formed their perspectives, looking at the assessors' opinions regarding specific policy and guidance documents, and discussing the assessors' views of specific thermal improvement measures to conservation properties.

8.3.1 Assessor context

Before discussing the specific research findings in relation to the assessor perceptions of planning, it was important to examine and understand the context from which the assessors came from. The first contextual issue considered was the amount of resource given to conservation properties within local planning, identified as a common issue for street-level bureaucrats (Catney & Henneberry, 2012). The results of the interviews showed that conservation officers made up 12% of the total number of planning officers on average and the survey results were 12.9% on average. However, the percentage of applications referred to conservation taken from the interviews was 67% on average and no less than 30% for the Councils that provided that data; although it is important to note that these Councils were specifically selected as urban to reflect higher numbers of conservation affected properties. However, these findings still suggest that applications may be under-resourced when it comes to conservation assessment. This finding was supported by a number of assessors commenting in both the interviews and survey about recent budget cuts due to austerity measures, and the subsequent reductions of staff. This has significant implications for how much time assessors have, or do not have, to learn about new technologies, to network with other officers, to attend relevant seminars or conferences, or to give to each project. This potential deficit of time and knowledge could reduce the rate of approval for newer thermal envelope improvement technologies.

Future work could be done to better understand and quantify the various components of planning assessment, how much time assessors need for each project, and need to stay current with emerging technologies and building interventions.

The second contextual issue to be considered was the priority for energy efficiency improvement within the Councils. While all of the interviews indicated that energy efficiency was a priority for their authority, only 53% of the survey respondents said it was (Q8, Figure 8.9). It was also worth examining how assessors felt that priority was expressed. Half of the interview Councils and approximately 15% of the surveyed assessors indicated that it was explicitly in policy (Q9, Figure 8.10). Another common comment was that the priority for energy efficiency was expressed through the improvement of the Council's own buildings. When assessors were asked about how this priority manifest within the local built environment, the focus was mostly on new construction and microgeneration. Therefore, a key finding of this research was that in general, there was a mixed perception by assessors regarding their Council's priority for energy efficiency. Specifically, there was almost no perceived priority at local level for the thermal improvement of existing buildings, even though this is a clearly stated national objective.

The third contextual issue that was examined was the connectivity between Councils. This was done by asking both interviewees and survey respondents (Q13) how much they knew about how other Councils addressed energy efficiency issues in the built environment. In general, the majority of assessors were only aware of the practices of another Council if they had previously worked in it. Less than a quarter of the assessors indicated they had a good understanding of how other Councils addressed energy issues, while over a quarter said they had no understanding of how any other Council addressed energy issues. While communication between Councils regarding energy issues is not required by national legislation, it can be helpful to share best-practice, and examples of initiatives that have been either successful or unsuccessful. Additionally, this lack of communication amongst Councils could also have implications for the interpretation and application of policy, and result in diverse decision-making. Further work is needed in this area to better understand how local Councils share information, and how this information is passed down to officers and decision-makers.

8.3.2 Opinions and use of policy and guidance documents

The results of the research showed that assessors make use of both national and local planning policies for their decision making, with both being identified by interviewees (Figure 8.6) and survey respondents (Q35, Figure 8.16) as most significant. When it came

to guidance identified as most significant, the interviewees all mentioned EH publications (Figure 8.7) while these was only mentioned by just over half of the survey respondents (Figure 8.17) Local Council guidance was identified as second most significant in each case, followed by a diverse number of guidance sources and documents. This finding illustrates a few key issues. First, it shows that guidance on policy is necessary and useful as assessors all make use of it to inform their decision-making. This significance is emphasised by the high rating of local guidance, which shows that some Councils have developed their own guidance to assist in the planning process. Second, the diversity of the guidance sources also suggest that what assessors need the guidance for is not always available from their Council, or from the same organisation. The diversity of available guidance and lack of consistent prioritisation may also mean that different assessors may be using different sources of advice for the same issue which may result in inconsistent decision-making. Third, it was clear that guidance takes many different forms and served different purposes for the assessors. This included pro-active educational seminars and networking events to looking up a specific document on a particular technology or building feature that the assessor was addressing. Future work could help clarify how policy guidance is used by assessors and how it is best delivered.

Both interviewees and survey respondents (Q39) were asked what policy or guidance document was needed to improve the energy efficiency of existing buildings while maintaining heritage. In both cases, the most common comment was that clearer national guidance on how to prioritise these objectives and what interventions are allowable was needed. This resulted in two key findings for why planning may be perceived as a barrier to thermal improvements.

First, the lack of such guidance means that local authorities and assessors must rely on local policy interpretations of national policy or available guidance to make decisions. Although local governance is fundamental to the English planning system, this results in different local interpretations and decision-making, and inconsistencies in the application of national policy at the local level. While this outcome is in some ways appropriate, since local policies should reflect local issues in English planning; it must be considered whether energy efficiency objectives or heritage preservation are national or local issues. There are clear indicators that separately, these issues have national priority; policy and EH guidance for heritage status and protection is national, as are the Building Regulations which are the national mechanism to ensure energy efficiency. However, Article 4 directions, and the exemptions within the Building Regulations for heritage buildings move these issues to the local arena. It is clear from the assessor's responses that they do not feel there is enough national direction for this issue to be properly addressed locally.

This may result in undesired or unexpected levels of policy inconsistency and should be examined further.

Second, without clear or strong national guidance, this finding suggests that assessors do not feel they have enough information to make these decisions robustly, and must rely on guidance, their personal interpretations, experience, or colleagues. It also suggests that assessors do not feel confident that their decisions always reflect national objectives. If an assessor is not sure about a decision, the response least likely to cause irreversible harm to a building will be to avoid uncertain changes and to reject an application. This type negative or defensive decision-making can be used as a way to 'resolve tensions and contradictions within policy regimes, governance structures or empirical circumstances' (Catney & Henneberry, 2012). Perhaps more significantly however, assessors can avoid blame through negative or defensive decision-making, where 'the fear of blame from the wider public… is often a powerful force in shaping the behaviour of street-level bureaucrats, as well as the wider actions of the organisations of which they are a part' (Catney & Henneberry, 2012) Therefore, without being provided with national clarity on allowable measures or how to prioritise objectives, assessors may be more inclined to reject applications for thermal improvements where those improvements affect heritage elements.

8.3.3 Opinions regarding conservation and energy efficiency

Questions were asked of both interviewees and survey respondents (Q14-27) to better understand how the term *harm* was interpreted by assessors with respect to thermal envelope improvements; and to see if there was a consistency of opinion and approach. The results could generally be categorised into two primary concerns with regard to what constituted harm: damage to and loss of original fabric; and, visual impact on character. However, from responses to questions regarding specific interventions for thermal envelope components, it was clear that opinions varied on what would or would not cause harm. This was particularly evident in the survey responses which showed broad diversity with respect to whether assessors felt specific measures were acceptable or not. Even the measure with the highest degree of agreement (Figure 8.12) only had 51% of respondents agreeing that draught proofing and improved air tightness to original windows in conservation areas was always appropriate. Although an additional 39% said it was often appropriate, and 10% said it might be appropriate. In the interviews and open-ended survey responses, assessors clearly articulated that each case must be looked at on an individual basis, and so this, along with *end aversion bias* (Choi & Pak, 2005) may explain a reluctance to select the 'always appropriate' or 'never appropriate' options.

However, of the 26 survey rated interventions, four had at least one respondent in each of the six answer options, from always acceptable to never acceptable, including 'don't know'; and seven had at least one assessor in five answer options. This shows a high level of discrepancy regarding how assessors feel about specific interventions and is indicative of a subsequent discrepancy in how applications for these interventions are decided. This was also evidenced by the interview discussions and survey text-box answers where assessors explicitly talked about interventions they would or would not approve. What was not clear from the results was if these differences were consistent between assessors at the same Council or not. Therefore, further work is needed in this area to understand how widespread the differences may be, and to further expand the interventions being examined.

A second significant finding from these questions was differences between what assessors felt they had legislative control over and what they did not. While a number of assessors spoke about permitted development rights allowing interventions that they did not agree with, other assessors were clear that they would reject the applications for the same interventions, and did not discuss whether it was permitted or not. While PD may be removed through the use of an Article 4 direction, there are still many conservation areas without them. This means that PD, which are nationally granted, should apply to these properties. However, the discrepancy in the assessor views may be seen as reflective of the lack of clear guidance on PD. The Planning Portal provides a certain amount of guidance (see Section 4.2.3.1) but then directs applicants to check with their LPA for further information regarding PD (DCLG, 2013b). This is a system that allows misinformation to be perpetuated, as an assessor who believes they have the right to assess certain work, and that it is not PD, will give this advice to an applicant who has been instructed to ask their LPA for advice on what is PD. For the purpose of this research, it was simply identified that assessors did not agree on what constituted PD for certain interventions. More work is needed to better understand this issue, and to clarify what measures are and are not allowed when it comes to the thermal improvement of conservation properties.

8.4 Conclusions

This Chapter has presented the results of research on the perspectives of those who assess applications to better understand the users' perspectives on planning. Key findings of this work included that:

- The assessment of conservation projects is perceived as under-resourced, and if true, this may have an effect on the approval of thermal envelope improvements to heritage properties.
- Not all Councils are perceived as prioritising energy efficiency, and specifically the thermal improvement of existing buildings, even though both are explicit national objectives.
- The majority of assessors interviewed and surveyed did not know much about how other Councils address energy issues in the built environment which could have negative implications for knowledge-sharing benefits and consistent decision-making.
- Assessors need different types of guidance to inform their decisions regarding the thermal improvement of conservation properties; and the current available guidance comes from a diverse number of sources.

Specifically with regard to the research question, 'Why is planning perceived as a barrier to the thermal improvement of conservation properties?', the key findings of this work were:

- The broad diversity of guidance documents and sources results in assessors using different combinations of guidance for decision making, which could lead to inconsistencies.
- The lack of clear national guidance on how to prioritise the objectives of energy efficiency and conservation leads to local interpretation which may be diverse or inconsistent, and may also result in a higher number of application rejections due to uncertainty.
- Although assessors tended to agree that the 'loss of fabric' and 'visual impact to character' were the main ways in which harm to heritage properties occur, their interpretation of how that applied in practice varied. This results in some measures being considered appropriate, and approved by some assessors, but not by others; creating an inconsistency in planning decisions.
- There is a lack of clarity regarding permitted development rights, resulting in some interventions that may technically be allowed through policy, being rejected at application.

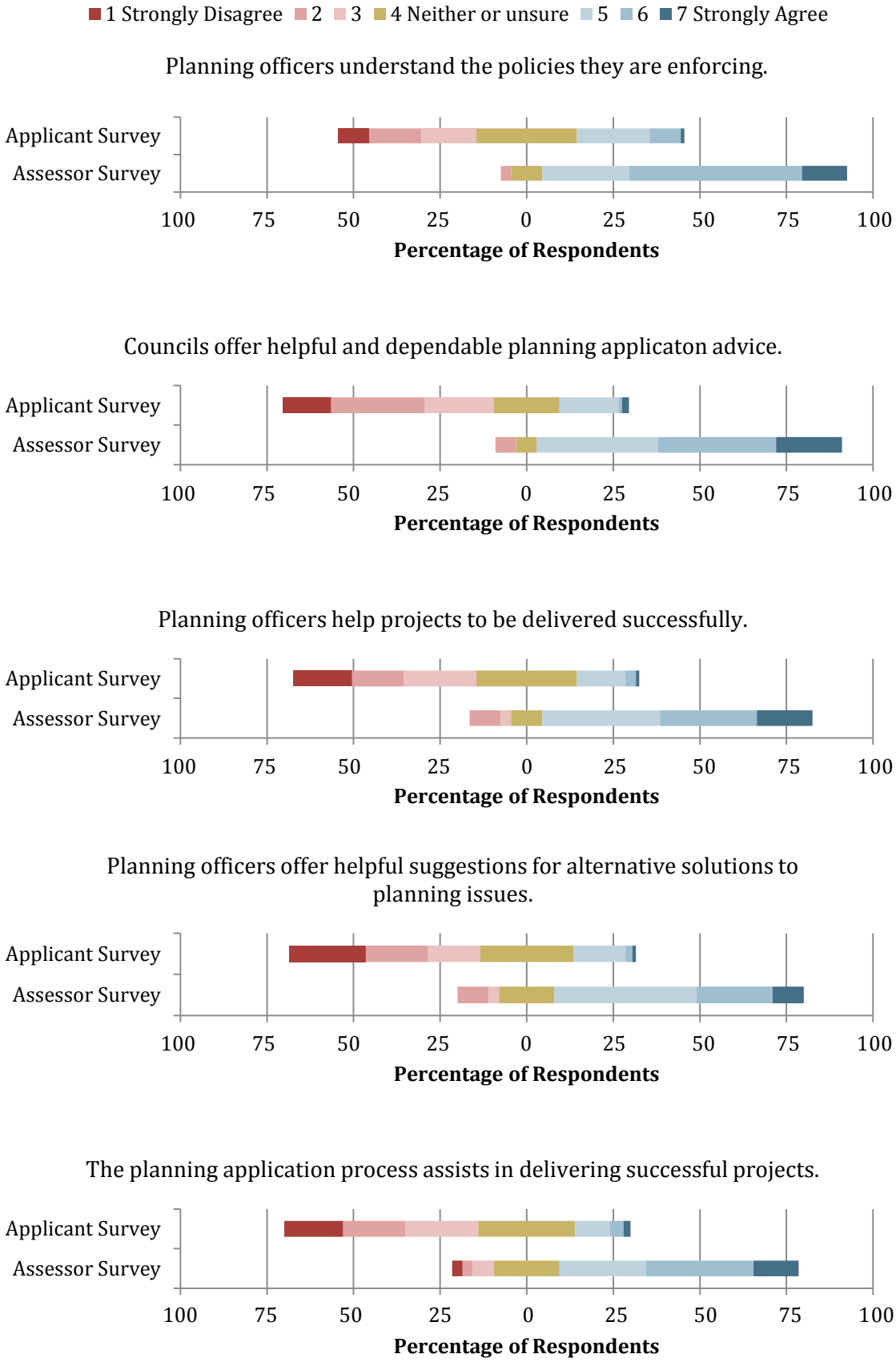
9 Comparison and Discussion of the Users' Perspectives

This Chapter compares the perspectives of both the applicants and the assessors to identify and prioritise the reasons for planning being perceived as a barrier to the thermal improvement of conservation properties. In particular, the identification of 'a lack of consistent information and advice amongst Councils' provides the basis for the second phase of the dissertation research presented in Chapter 10.

9.1 Comparison of rating scale statements

One way the users' perspectives were compared was to examine the rating scale statements from the two surveys. This was done to compare the strength of opinions between the user groups. Statements were compared where either group had over 75% agreement or disagreement. Figure 9.1 compares the six rating statements with the highest percentage of assessor agreement to the identical statements from the applicant survey. There was a clear divergence of opinions between the two groups. As discussed in Section 8.2, four of these six statements had to do with the perceived helpfulness and benefit of the planning process and planning officers. The results of this comparison show that the applicant's did not feel that the planning process or officers were helpful or beneficial. Future work could examine this further to better understand and improve how applicants and assessors interact with the planning process and with each other.

Figure 9.1 : Highest assessor agreement statements compared to applicants



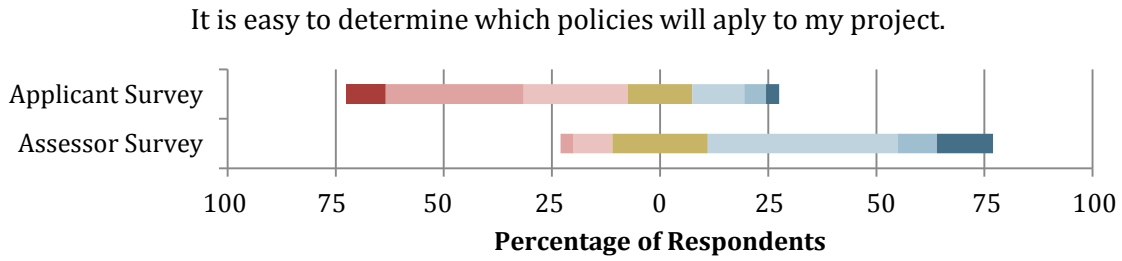
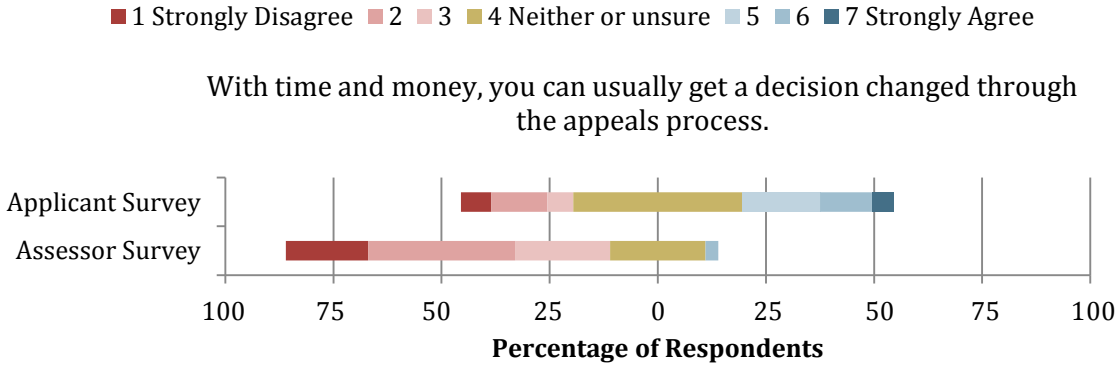


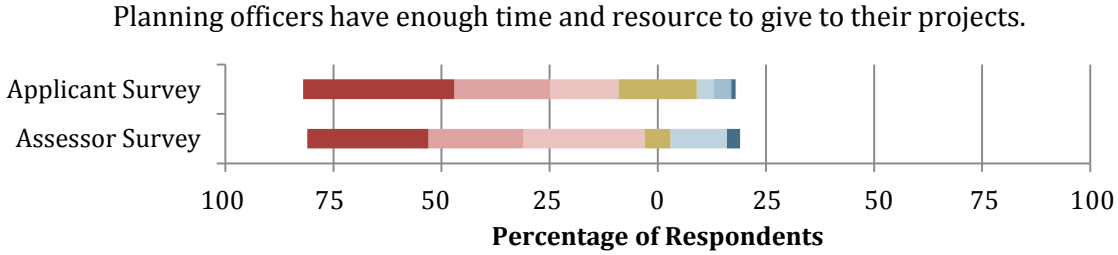
Figure 9.2 shows the second set of comparisons that looked at statements assessors had disagreed with by 75% or greater. Again, there was substantial disagreement between applicants and assessors with two of the statements; particularly as these represented two of only three instances where the applicants had higher agreement than disagreement. However, the statement that planning officers have enough time and resource to give to their projects was strongly opposed by both user groups. This finding suggests that the issue of assessor resource is a significant problem that affects both assessors and applicants.

The last comparison was of the six statements with over 75% disagreement by the applicants. Here there was some agreement and disagreement between applicants and assessors. There was shared disagreement that planning application decisions and advice are consistent between Councils. However, assessors felt that planning decisions and advice were consistent between different officers, and that application decisions were consistent and reliable, whereas applicants did not. This shows some inconsistency on the part of the assessors as these answers conflict with the opinion that there is a lack of consistency between Council decisions. However, this could be due to assessors focusing on their individual Council whereas applicants may have been considering the statements more broadly.

Both applicants and assessors generally disagreed with the statement that there were no conflicts between policies. However, there was diverging opinions over the statement regarding decisions being based on written policy and guidance and not opinion. This again shows some inconsistency in the responses of the assessors. If policy conflicts exist, and previous findings from the assessors indicate that they desire explicit information on how to prioritise objectives, then due to a lack of explicit policy or guidance, decisions must be made through local interpretation and opinion.

Figure 9.2 : Highest assessor disagreement statements compared to applicants





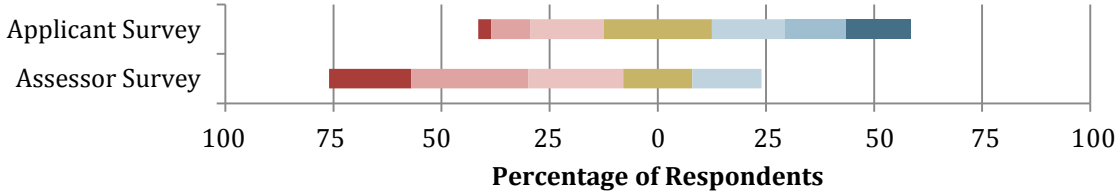
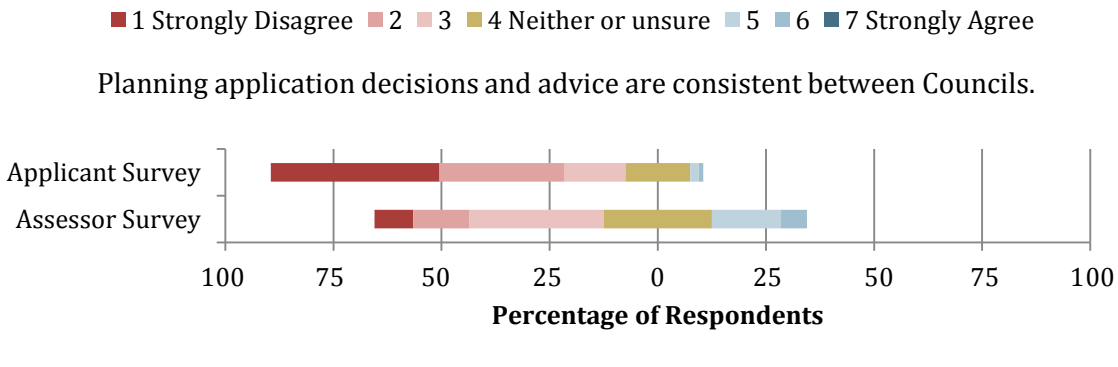
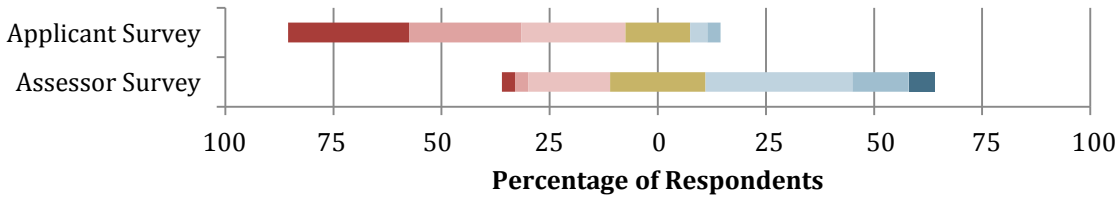
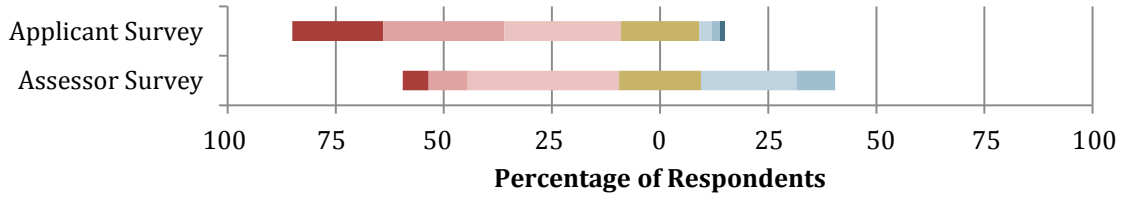


Figure 9.3 : Highest applicant disagreement statements compared to assessors

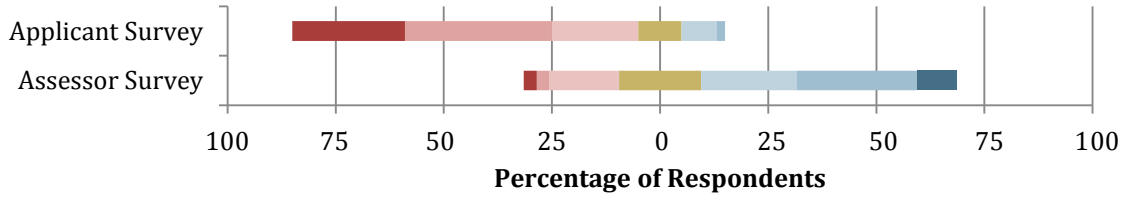




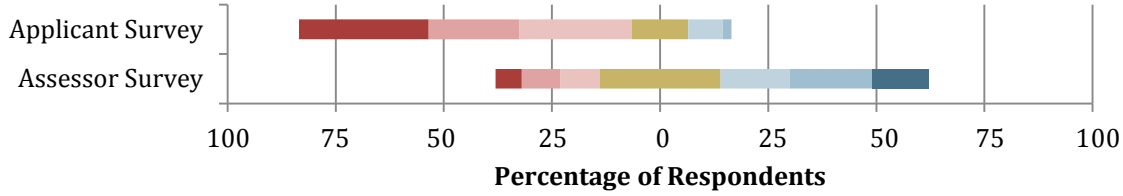
Planning policies generally agree and there are no conflicts between them.



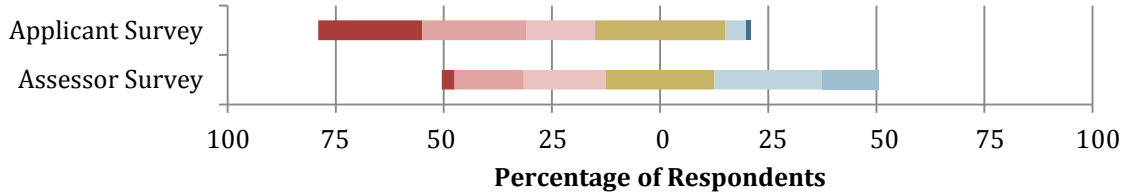
Planning application decisions are consistent and reliable.



Decisions are based on written policy and guidance and have little to do with opinion.



Planning officers are generally up to date with available technological solutions.



The comparison of the users' perspectives show that there are significant differences between the two user groups and how they view planning issues. This could also suggest a lack of understanding, and the potential for poor communication, between the two groups. More research is needed to investigate whether or not this lack of consistent perception has an impact on the planning application process.

9.2 Users' objectives and key findings

The findings of the research in this chapter shows that the perspectives of those who submit applications, and those who assess applications are not the same. This is likely to relate to how each user group interacts with the policy and guidance, and what their objectives are in doing so.

The applicants' objective is to obtain permission for their project. To do so, they desire clear and reliable information that will help them prepare their application, and give them confidence that what they are proposing will be acceptable. Therefore, it is sensible that the findings of Chapter 7 were that applicants were most concerned by: a perceived lack of consistency and reliability in the planning application process; a lack of certainty regarding what measures were allowed; and the conflicts between energy efficiency and conservation objectives in both policy and guidance.

The assessor's objective is to assess applications against policy and policy objectives. To do so, they must look to the policy itself for clarity of wording and intention, and to available guidance to provide further detail on policy matters. Therefore, it is sensible that the findings of Chapter 8 were that assessors were most concerned by: a perceived lack of clear national guidance on how to integrate energy efficiency and conservation objectives; the broad diversity of available guidance; and the lack of resource available to their projects due to staffing cuts.

9.3 Planning as a barrier to the thermal improvement of conservation properties

With respect to thermal improvement projects to conservation properties, applicants indicated that there was a lack of clarity as to which interventions were allowed, and felt strongly that decisions were inconsistent both between Councils and between officers. Assessors felt that there was a lack of clear national direction for how to combine the conflicting objectives of energy efficiency and conservation. The results of the research as illustrated by Figure 8.12 and Figure 8.13 showed that different assessors have different opinions on the appropriateness of specific thermal improvements. This provides evidence that a likely outcome of all of these issues is an lack of consistent decision-making.

Both applicants and assessors felt that decision-making was not consistent between Councils. While this is in part an expected outcome of the discretionary English planning system, the findings of this work suggest that the primary answer to 'Why is planning perceived as a barrier to thermal improvements of conservation properties?', is that planning information and decision-making are inconsistent. This issue is likely symptomatic of the larger issue regarding a lack of clear national policy and guidance on this issue, identified by assessors. This may subsequently create real problems for applicants who want to improve their properties but find the process confusing, difficult, or contradictory; as was illustrated by the applicant project experiences. This may be particularly true when applicants have projects located in different Councils, which was

true for 60% of the applicant survey respondents, illustrated by Figure 7.14. Work done by McMichael and Shipworth suggests that up to one third of energy efficiency information seekers are likely to engage with their social network (friends, family, colleagues, et al.) to get information (McMichael & Shipworth, 2013). If members of an individual's social network reside in different Councils, a lack of consistency between Councils may also result in confusing or contradictory information delivery.

The main result of this issue of a lack of consistency is a lack of the certainty and reliability that applicants need, to in order to put forward successful applications. A lack of confidence in obtaining planning approval may cause applicants to remove uncertain or contentious elements from their application, and result in fewer thermal envelope improvements being put forward. Equally, without clear policy or guidance, officers may feel more comfortable rejecting interventions about which they are unsure, potentially resulting in fewer approved applications for thermal envelope improvements.

Having found the inconsistency of information and decision-making as a key reason for why planning is perceived as a barrier, the second phase of this dissertation seeks to validate this perception, and determine how it can be addressed.

10 Comparing Local Council Websites

This Chapter details the second phase of research to answer the second half of the research question 'Why is planning perceived as a barrier to the thermal improvement of conservation properties, and how can it be addressed?'. From the first phase of research, the problem of a lack of consistent information and decision-making for planning applications was identified as a primary reason for why planning was perceived as a barrier. Additionally, the research identified that most users agreed this inconsistency was expressed through inconsistency between Councils. This phase of the research seeks to validate that this perceived inconsistency between Councils exists. To do so a selection of 13 Councils is investigated for their web-based information regarding planning and the thermal improvement of conservation properties. The aim is to identify what aspects of information are inconsistent, in order to better understand what affect this may have on thermal improvements, and to propose ways to address them.

The Chapter presents the sample selection for the research and an initial website mapping exercise that was done to clarify the key issues. From this work, the definition of information in this context, and its associated issues, are further articulated; and the need for a way of quantifying them is identified. Borrowing from the discipline of Information Management, a new Comparative Information Quality Assessment method is developed and applied to the sample Councils. The results of the Assessment and the implications for thermal improvements to conservation properties, as well as the implications for future uses of the new method, are presented and discussed. Finally, conclusions drawn from this second phase of the research are presented.

10.1 Focussing the research

The objective of the second phase of research was to detail what was meant by 'inconsistency of information between Councils', in order to be able to address it. This section discusses the methods considered for this phase of the research and identifies a comparison of information presented on Council websites as the selected method.

10.1.1 Determining the method

Three different methods were considered for how best to further investigate the perceived lack of consistent information and decision-making between Councils and achieve the research objectives. One method considered was to develop a typical thermal improvement project of an historic property and to obtain planning advice from a selection of Councils regarding it. This was rejected for a number of reasons. First, a prototype project, even if based on a real building, would be difficult to discuss without relevant local context. Second, there was an ethical issue regarding the use of planning officers in an official capacity for a theoretical research project. Third, this method would rely on the advice of an individual officer and not be representative of the Council. Fourth and finally, this approach was rejected as the expected results would be similar to those collected in the survey and interviews, and so would not contribute new information.

The second method considered was a direct comparison of all Council policies that impacted a project for the thermal envelope improvement to a conservation property. An initial survey of policies was done on the 13 sample Councils. The survey found that local policies were similar in language and wording to national policy. This meant that specific advice regarding improvement measures was vague. For example, Policy DM2.3 of Islington's Development Management Policies which deals with heritage states that (Islington Council, 2013):

> *G. Climate change*
>
> *i) Proposals that aim to mitigate, and adapt to, the effects of climate change should in the first instance explore all opportunities of enhancing energy efficiency and forms of providing renewable energy and improved adaptation to climate change without harming the significance of heritage assets.*
>
> *ii) Where conflict between climate change objectives and the conservation of heritage assets is unavoidable the public benefit of mitigating the effects of climate change will be weighed against any harm to the significance of heritage assets, in accordance with the development management principles in national, London and Islington planning policy.*

The use of words like *harm* and *public benefit* were identical to national policies; and similarly to them, no instruction was provided for how these measurements should take place. This meant that applicants would need to look to guidance provided by the Council for clarity. This method was therefore rejected as it would not provide detailed information on how policy was interpreted or application decisions were made.

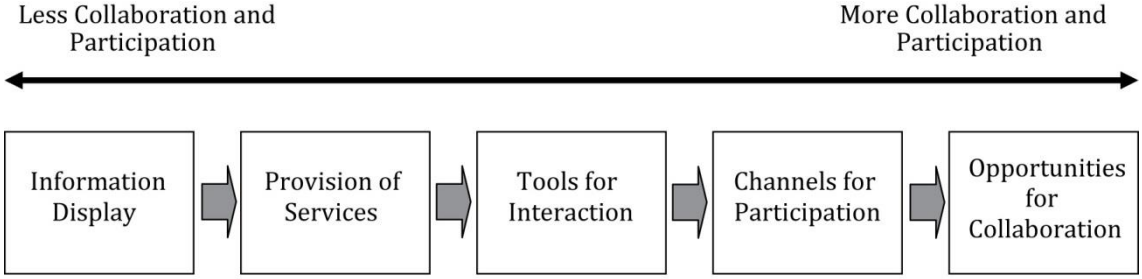
The third method considered, and selected for the research, was to compare Council guidance on thermal improvements to conservation properties by comparing information provided on Council websites and through Council guidance documents. This followed directly from the previous method considered, as a way to better understand the interpretation and application of Council policies. This process, of looking to the Council websites for information, was also considered to be similar to the process an applicant might go through to learn about what they could do on their project. For applicants, Council websites provide detailed information on the planning application process, rights, and responsibilities. In addition, Council websites direct applicants to policies and guidance documents that are intended to help them to develop their applications. Council websites also provide information on energy efficiency and can be used by the Council as a platform to promote desired interventions. Finally, Council websites may also direct users to external sites for additional information and guidance. This method was therefore selected as appropriate as it most closely followed the process of making a planning application and was considered best for comparing how policy information was interpreted, and how different interventions were promoted across Councils.

10.1.2 E-Government and the application of planning

Deloitte Research defined e-Government as, 'the use of technology to enhance the access to and delivery of government services to benefit citizens, business partners and employees' (Deloitte Research, 2000). The World Bank notes that e-government has, 'the ability to transform relations' which can serve a variety of different ends including, 'better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management' (The World Bank, 2011).

There has been rapid development of e-government systems, particularly in the past 20 years. In Britain in 1995, there was very little web-interaction in government, or even society in general; however by 2005, almost all government departments and agencies and local governments had a website (Margetts, 2006). Sandoval-Almazan and Gil-Garcia propose five functional stages of government portals from less to more collaborative and participatory, as illustrated in Figure 10.1.

Figure 10.1 : Functions of e-government (Sandoval-Almazan & Gil-Garcia, 2012)



These stages were applied to English planning to better understand how the planning process is applied through e-government, and as a way to structure the research method. Sandoval-Almazan and Gil-Garcia identify *information display* as a basic function of e-government. This can be done through the use of directories, menu structures, page-links, or site-based search engines (Sandoval-Almazan & Gil-Garcia, 2012). With regard to planning information, this was identified as the most common function of the sample Council websites. Each had extensive pages of information organised through hierarchical menu-systems. Similar structures are also used for sustainability and energy efficiency information. In addition, each sample Council website had a site-specific keyword search function.

The function *provision of services* moves from a one-way provision of information to an active transaction (Sandoval-Almazan & Gil-Garcia, 2012). With regard to planning, the act of applying for planning permission is one such transaction. Applications can be made to every local authority in England, online through the Planning Portal. These applications are then sent from the Planning Portal to the local authority (DCLG, 2013b). Applications can still be made to the Councils directly by paper application, but there is clear encouragement to use the online system. In addition to submitting applications online, comments can be made regarding pending planning applications through Council websites.

It is within these two stages where online functions with respect to planning are contained. There were no further interactive or collaborative components on either the sample Council websites or the Planning Portal. This suggests that there may be future development of e-government with regard to collaborative or interactive planning. However, for the purpose of this research, it is the first functional phase of *information display* that was found to be the most prevalent and relevant to the research question. *Provision of services* was in general found to be centralised and external to the individual Councils, therefore these components were not considered appropriate for comparison.

10.2 Council website mapping method

The objective of this phase of the research was to compare Council websites, recording and cataloguing the *information display* relevant to the thermal improvement of conservation properties. The sample Councils selected for this research were the same 13 Councils used to select the officers for interview, as discussed previously in Section 6.3.2. To make this comparison, a topical sitemap diagram method was developed. A sitemap, 'is essentially a map, diagram or textual description of the structure or content of a web site' (Pilgrim, 2007). Although sitemaps are typically used to provide a map or overview of the entire contents of a website; Council websites were found to have significantly more content than was relevant to the dissertation topic. The automated sitemap software in *Microsoft Visio* was trialled to generate sitemaps for the Councils, but the results were too large, and non-specific to the topic.

The decision was made to manually construct topic-specific sitemap diagrams using a hierarchical tree format and the diagramming software *yEd*. To address and accommodate unexpected changes to the websites, each page or document included in the sitemaps was downloaded and saved as a reference. All of the 13 Councils were mapped in mid-2012, with the final results being checked and made current to the end of October 2012. The constructed sitemaps were made of nodes and links. Nodes included all pages, documents, and links to external sites that were relevant to the thermal improvement of conservation properties. Nodes were created where there was any specific information on the thermal improvement of conservation properties; but also for all points containing information regarding planning policy, the planning application process, conservation policy, and on energy efficiency or sustainability relevant to buildings. The links illustrated which nodes connected directionally to each other. In addition to mapping the nodes through logical and sequential site exploration, the search engine function for each Council was used to check the resultant diagrams against keyword search results for the terms planning, conservation, energy efficiency, sustainability, carbon emissions, and insulation.

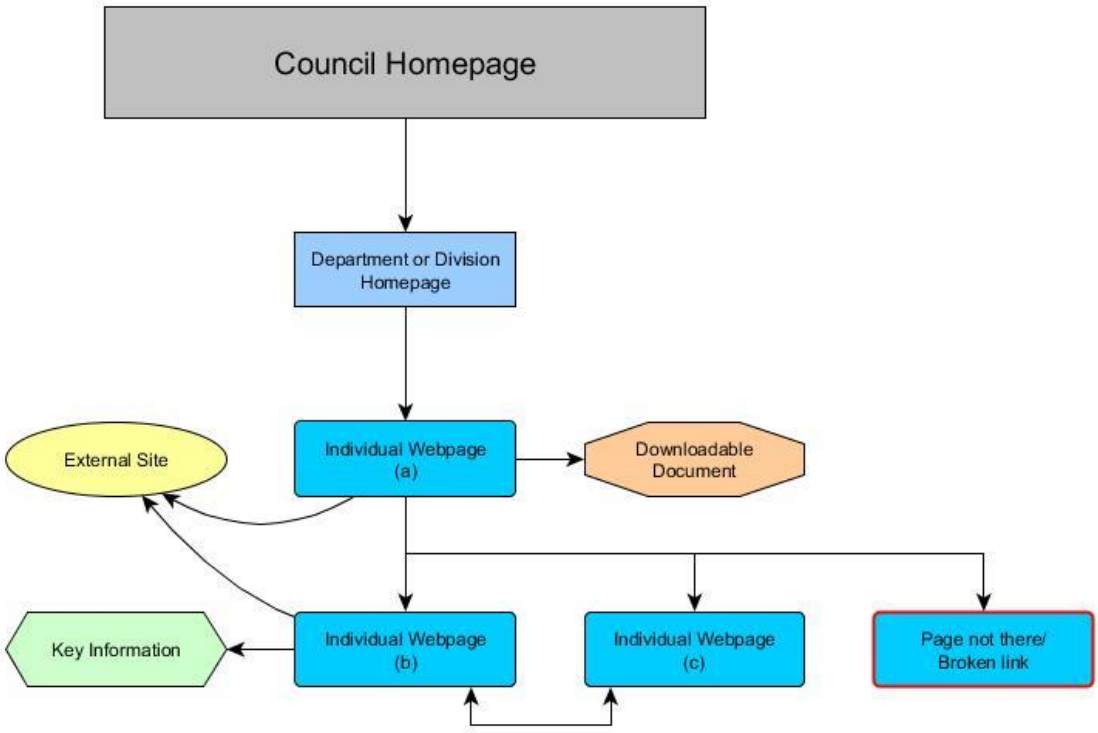
The diagram construction process was qualitative as it required the researcher to examine each page, document, or link and determine whether it fit into the stated research criteria. The resulting diagrams were double-checked upon completion and then reviewed again in October 2012 by the researcher as current and final. A limitation of this approach is that Council websites can be updated at any time, and so findings are restricted to a specific moment in time and may no longer be true. Additionally, the research relies on the findings and judgements of the researcher and even with due diligence, may not have captured all relevant nodes.

10.2.1 Diagram key

The final diagrams were constructed using four types of nodes: individual web-page, downloadable document, external site, and key information. The diagrams also illustrated directional links between nodes. Most of the Council websites used a 3-column site design with the main page information in the centre, a navigation menu to one side, and additional links, resources, or contact information to the other. Links within the main body of text were designated by straight lines, while links within the side columns were given curved lines. Links that led to missing pages, documents, or sites were illustrated by outlining the missing node in red.

Figure 10.2 provides a key and example of how the diagrams were constructed. Each diagram started with the Council homepage node at the top of the page in a grey box. This was linked, one step down, to the department or division homepage nodes within the Council, designated by light blue rectangles. From there, each individual webpage node was identified hierarchically by a blue rectangle. Page nodes were aligned based on how many levels into the site they were located. Therefore, the example shows that links to Webpages (b) and (c) were both within the body text of Webpage (a) and so were placed on the same horizontal line.

Figure 10.2 : Site mapping diagram key and example



The curved links from Webpages (a) and (b) to the external site node indicate that the links were not in the main body of text but in a side column. While most of the links shown are unidirectional, the link shown below Webpages (b) and (c) indicates that these pages both linked to each other within the body text. The node outlined in red indicates that although there was a link on Webpage (a), it was broken, and the page was not there.

10.3 Results and discussion of the Council sitemap diagrams

The final Council diagrams were too large to be included in the printed dissertation format. This section discusses some of the key findings of the exercise by using excerpts from the diagrams and minimised examples to illustrate key points. The full set of diagrams for the sample Councils can be found in Appendix J.

The first analysis done on the diagrams was to compare their quantitative features, illustrated by Table 10.1. The node count excluded the 'key information' nodes as these were qualitative markers for the research and not representative of unique items. The results showed high diversity in the diagrams. In terms of total nodes, the results ranged from 70-144 individual nodes relevant in some way to the thermal improvement of conservation properties. When broken down into the three components, the diversity was found across the three node types. There was less diversity in the number of levels deep the pages were located, showing that the sample Councils used similar structural formats, and that the variation was in the breadth of coverage, not the depth.

Table 10.1 : Quantitative comparison of Council sitemap diagrams

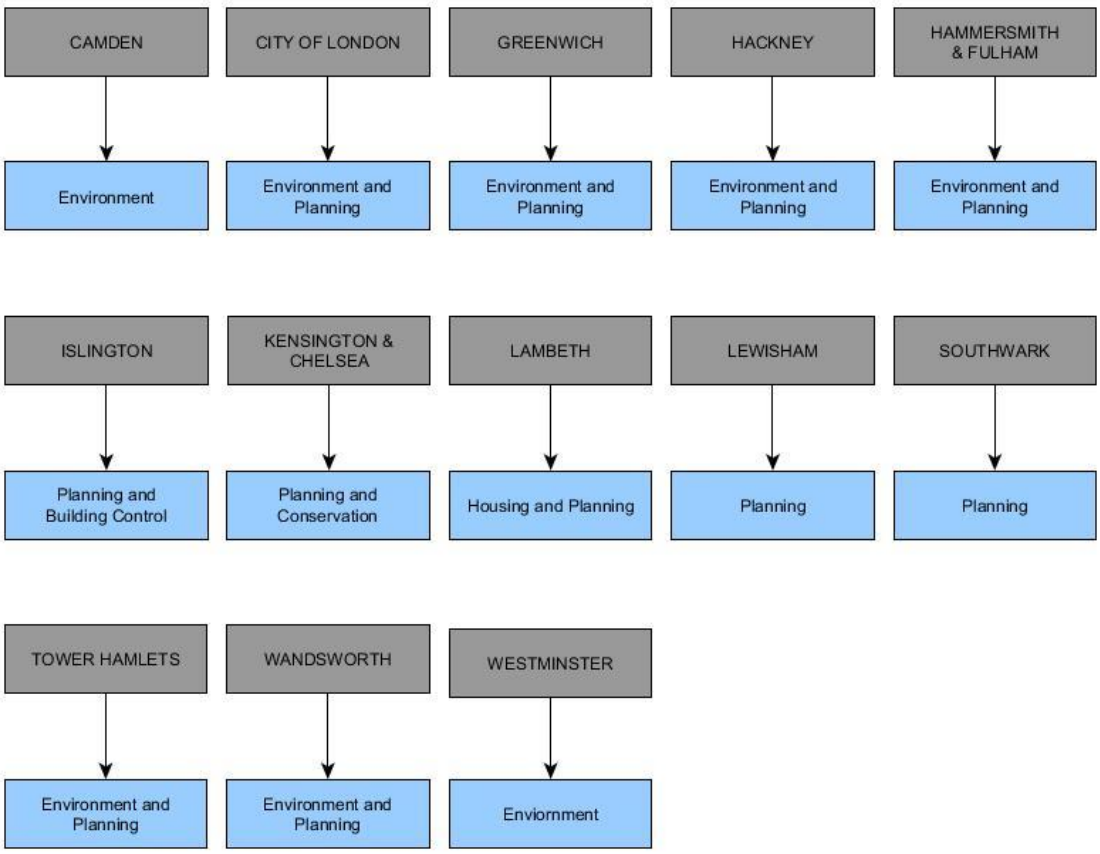
Council	*Page Nodes*	*Document Nodes*	*External Site Nodes*	*Page + Document + External Nodes*	*Depth of Pages*
Camden	73	23	30	126	8 levels
City of London	38	22	10	70	6 levels
Greenwich	51	7	34	92	6 levels
Hackney	36	14	17	67	6 levels
Hammersmith & Fulham	45	11	29	85	6 levels
Islington	101	22	21	144	7 levels
Kensington & Chelsea	58	21	24	103	7 levels
Lambeth	52	14	44	110	7 levels
Lewisham	45	19	34	98	6 levels
Southwark	53	9	20	82	5 levels
Tower Hamlets	42	24	27	93	6 levels
Wandsworth	69	20	18	107	7 levels
Westminster	65	34	28	127	6 levels
Mean	56.0	18.46	25.85	100.31	-
Standard Deviation	17.75	7.32	8.89	22.64	-

The quantitative analysis illustrated that there was little consistency in the design and communication of information, which seemed to initially confirm the findings from the first phase of the research. However, more detailed findings came from applying a qualitative analysis to the finished diagrams.

One of the key findings that came from the qualitative analysis of the diagrams was that Council departments, and the information they produced, varied. One way to understand the diversity of departments was to examine under which department planning was located, illustrated by Figure 10.3. In total there were six different names used for the department where planning was found. The most common name was 'Environment and Planning', used by six of the 13 Councils. Five of the six department or division names included the word 'planning' making it straightforward to find, although 'Environment', used by two Councils, did not.

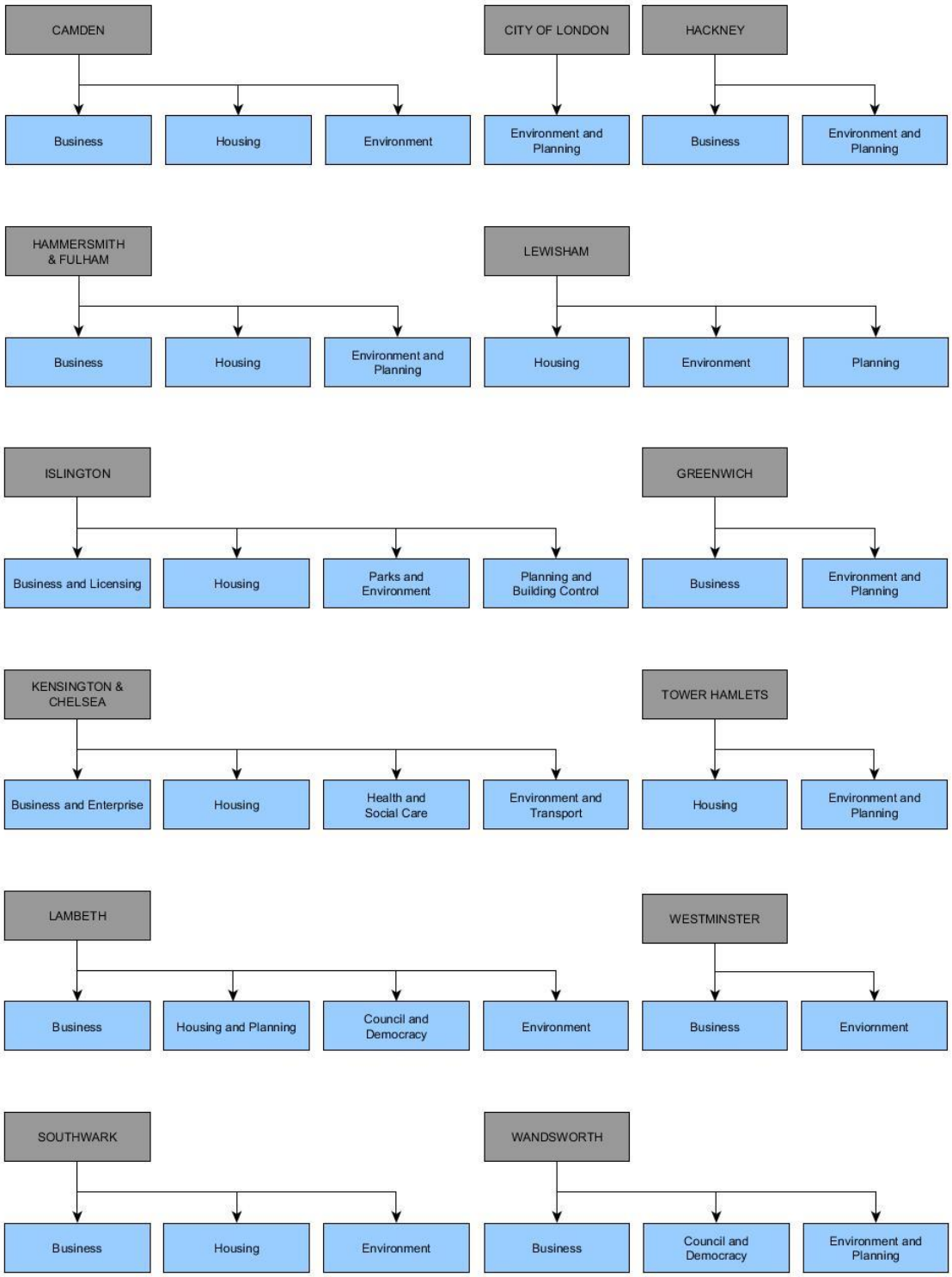
The department that contained planning, also contained building control for the sample Councils. Only Islington included 'Building Control' in the department title, while the rest were one level down from the department pages shown in Figure 10.3; aside from Westminster, where it was two levels down.

Figure 10.3 : Council department locations of planning



The Council departments providing information on energy efficiency were much more diverse as illustrated by Figure 10.4. Ten of the Councils provided information for businesses to improve their energy efficiency under their 'Business' departments. Eight had information for residents under their 'Housing' departments. Other departments providing information on energy efficiency included 'Council and Democracy' (in two

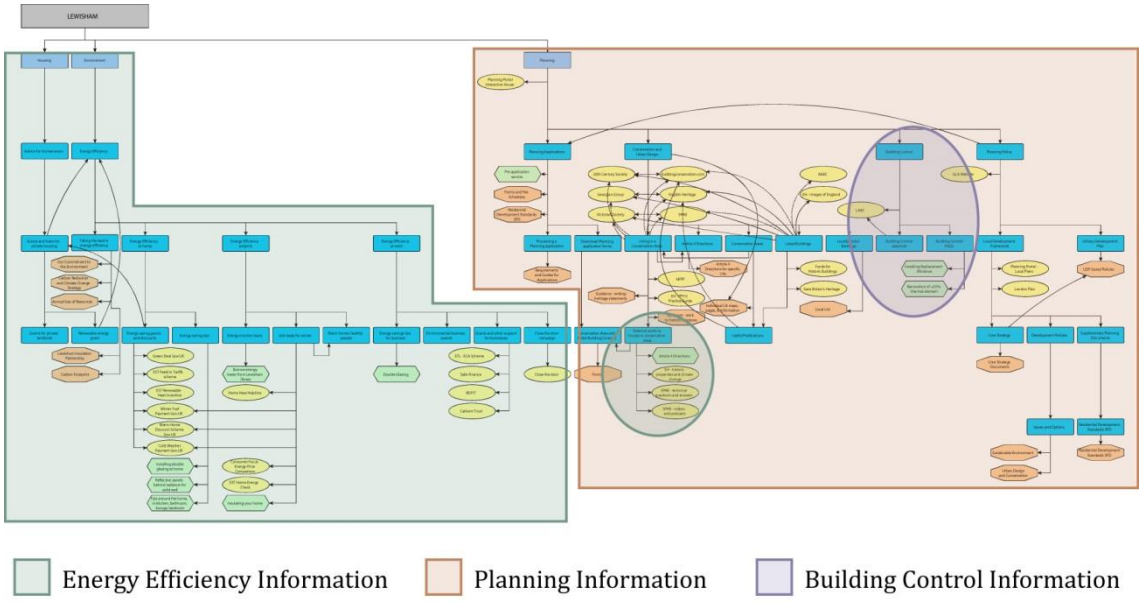
Figure 10.4 : Council department locations for energy efficiency information



Councils), 'Health and Social Care' (in one Council), and 'Parks and Environment' (in one Council). In terms of the cross-over between planning information and energy efficiency information, there was some energy efficiency information in most planning departments, although one exception to this was Kensington and Chelsea, where there was no energy efficiency information under the 'Planning and Conservation' department.

Once it was established that relevant information regarding energy efficiency advice was located in multiple parts of the Council website, the next investigation was to consider how well connected the different parts of the websites were. A second key finding showed that in general, that there was poor connectivity between energy efficiency guidance and planning, particularly from the planning information to the energy information. Lewisham Council, illustrated by Figure 10.5, is a typical example of the findings. The figure shows energy efficiency information highlighted in green, planning information highlighted in orange, and building control highlighted in purple. Between the two orthogonal shaded areas, there are no connectors, indicating that there were no links between any of the pages between the two groups. It was also a common finding that in most of the sample Councils, building control information had little or no connectivity to energy efficiency information, also clearly visible in Figure 10.5.

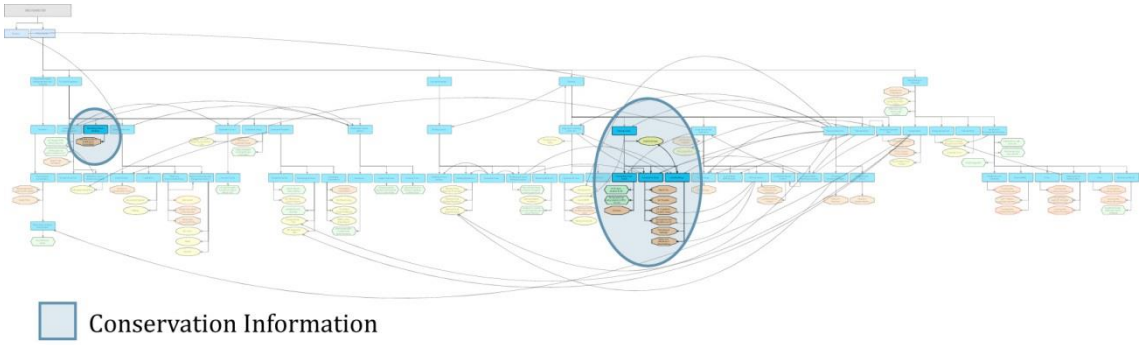
Figure 10.5 : Lewisham Council connectivity overlay



A small circle of energy efficiency information was located within the planning area. The page highlighted by this circle specifically dealt with 'External works to houses in conservation areas' and included information on Article 4 directions and external links to the English Heritage webpage on 'Historic properties and climate change' as well as to two SPAB information pages. However, all of the detailed information provided by the Council regarding energy efficiency improvements to properties was located in the green shaded area. This means an applicant developing a planning application would need to actively look for the energy efficiency information, under the Environment department, in order to benefit from it. If they only looked at the planning pages, they would be linked to EH or SPAB, but only if they looked at that specific page regarding conservation areas.

Another example of disconnect between relevant information was found in the Westminster Council sitemap diagram. Westminster was one of only 4 of the sample Councils to produce a specific guidance document on the sustainable retrofit of heritage properties, *Retrofitting Historic Buildings for Sustainability* (Westminster City Council, 2013b). However, as illustrated by Figure 10.6 by the small highlighted circle to the left in the Figure, the document was found under the 'Go Green Programme' page which led to a page on 'Retrofitting Historic Buildings' which had a link to the document. Meanwhile, as illustrated by the highlighted oval to the right in the Figure, under the 'Planning' page was a page on 'Heritage Assets' which had extensive information on conservation areas and listed buildings. The conservation planning pages had links to a number of documents including information on conservation areas, information on the listing of buildings, and a supplementary planning guidance document regarding 'Repairs and alterations to listed buildings' (Westminster City Council, 1995). Significantly, there were no links between these two highlighted areas, although once downloaded, within *Retrofitting Historic Buildings for Sustainability,* readers were directed to the planning pages. However, an applicant who only looked to the planning pages for guidance would not be directed towards the document; meaning it would only be found by those who specifically sought it out. This limits the benefit that the document may provide by informing those who are not aware of energy efficient measures about what measures may be beneficial or appropriate, and illustrates an information delivery disconnect.

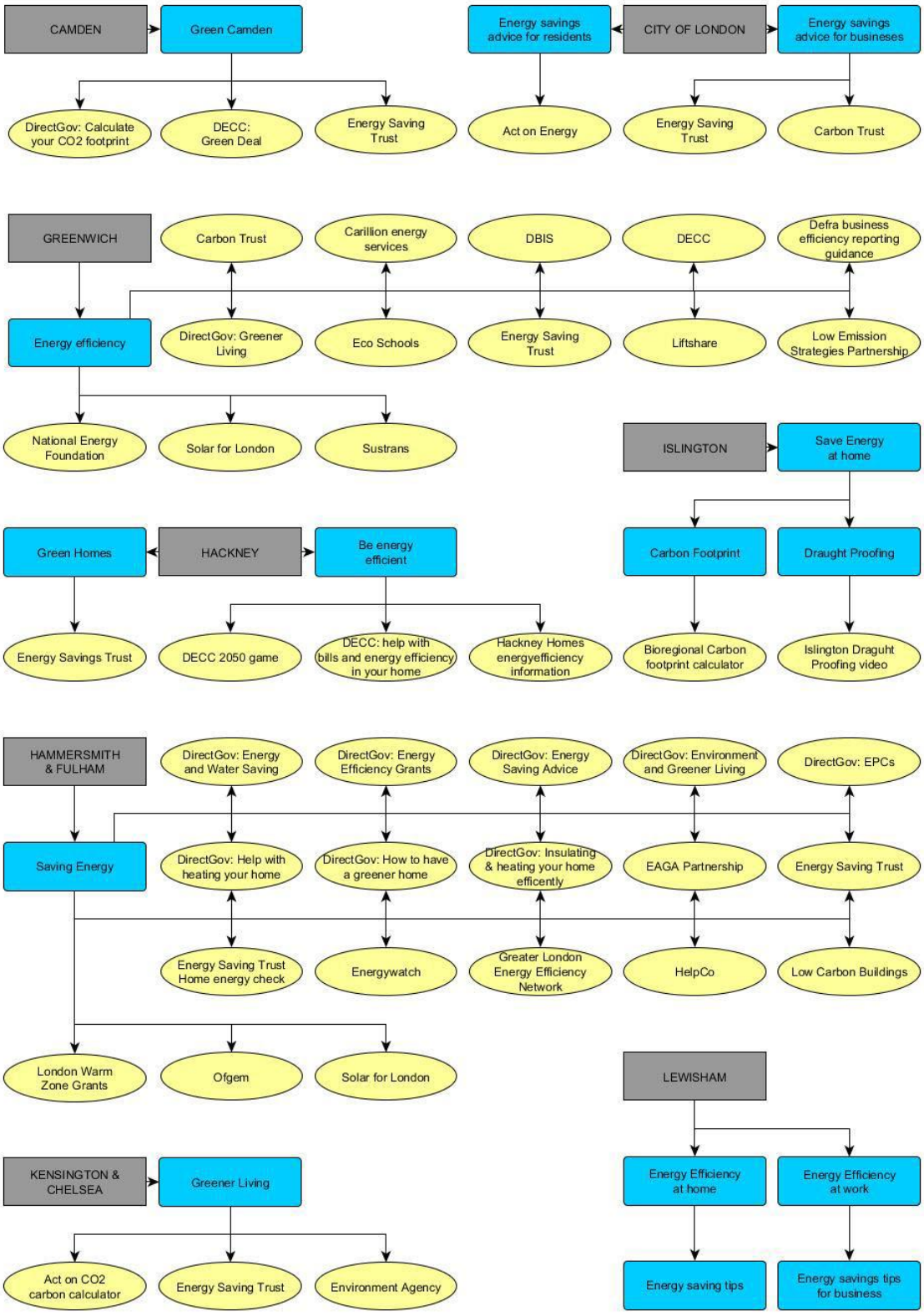
Figure 10.6 : Westminster Council connectivity overlay

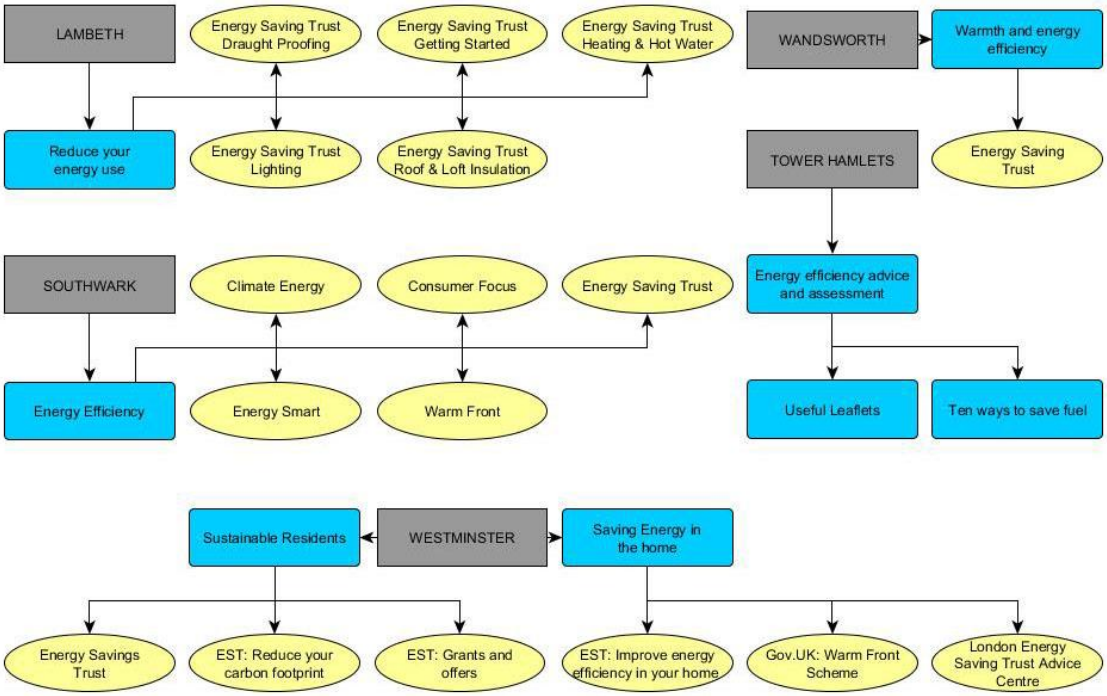


This diversity of the location of the relevant information, is in part reflective of the different types of users who interact with the Council, and how the Council interacts with them. However, with regard to this research, it also represents challenges to the planning applicant. Applicants who go straight to the planning pages for information are unlikely to be directed to the business, housing, or environment pages which could help them develop a more energy efficient project. It is important to note that it was necessary in undertaking the diagram construction to use the key-word search function of the Council to find relevant information on energy efficiency issues. However, a typical applicant looking for general planning and building control advice for their project may not be as diligent in searching specifically for information on energy efficiency. Nor would they necessarily scrutinise all the available page results for relevant information, as was required by this research. It is more likely that an applicant would go to the pages most immediately relevant to their search, and follow any specific links from those pages. In the case of thermal envelope improvements to conservation properties, a user might go to the planning pages first, and specifically to the conservation pages to find out what is, and what is not, allowed. In many of the Councils there was no connection from conservation planning information to energy efficiency information, as shown by the example in Figure 10.5. This means that even if the Councils did have good advice regarding thermal envelope improvements, it was generally not linked to from the conservation pages specifically, or from the planning pages in general.

The third key finding from the qualitative analysis of the sitemap diagrams, was that there was a diversity of energy efficiency information and guidance available. There were a number of indicators of this trend including what measures were recommended or suggested by the Council, what supplementary guidance on energy efficiency had been prepared by the Council, and what external sites the Councils used to provide additional information. Figure 10.7 illustrates what external sites Councils linked to under their pages on energy efficiency.

Figure 10.7 : Council links to external energy efficiency information

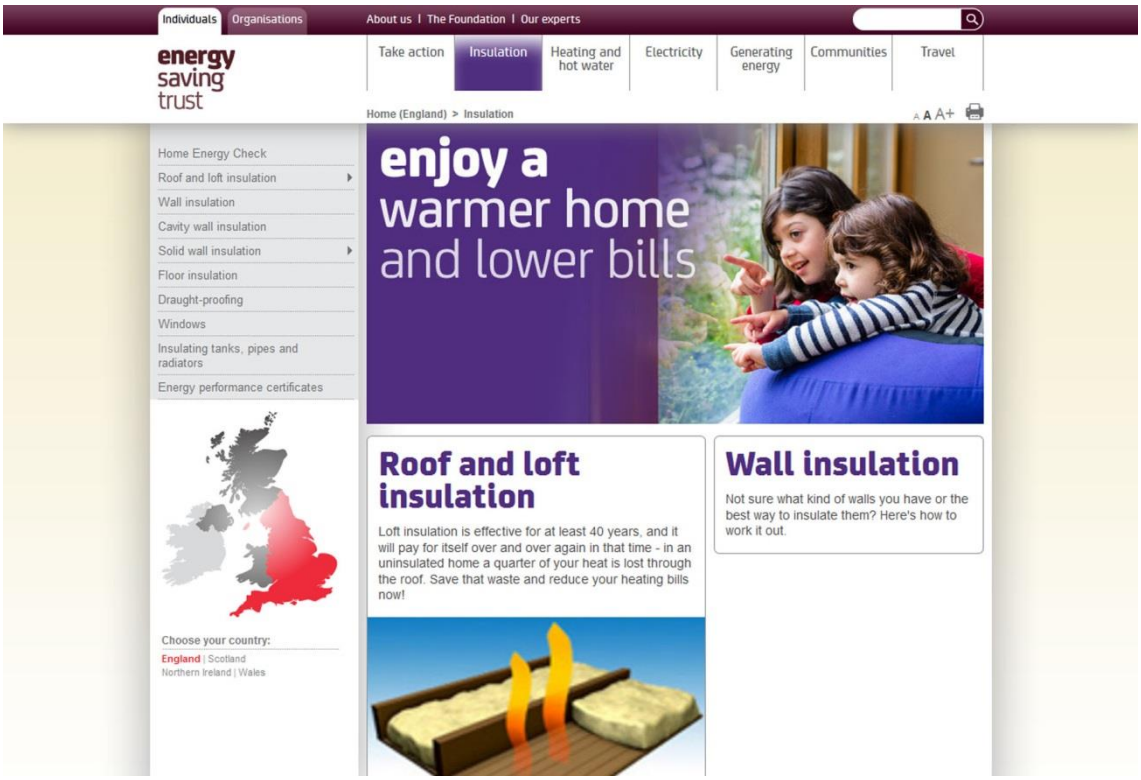




Councils like Greenwich and Hammersmith and Fulham had extensive links to external sites. In contrast, Councils like Lewisham and Tower Hamlets did not provide external links at all, although they did provide information directly on their own pages. In terms of the actual links provided, there was significant diversity in the sites and pages provided by the sample Councils, illustrating an inconsistency in the use of external guidance. Figure 10.7 also shows that the pages where the energy efficiency external links were, was also diverse. This illustrates a significant inconsistency in the way that energy efficiency information was delivered across the sample Councils, and what information resources were promoted.

The most common link, provided by ten Councils, was to the Energy Saving Trust. The Energy Saving Trust is a social enterprise with a charitable Foundation that 'offers impartial advice to communities and households on how to reduce carbon emissions, use water more sustainably and save money on energy bills' (Energy Saving Trust, 2013a). Positively, with respect to thermal envelope improvements, the Energy Saving Trust promotes 'Insulation' as the second menu-tab item, shown at the top of the insulation page screen-capture, in Figure 10.8. However, although solid wall insulation was one of the measures explained and suggested, there was no mention of potential conservation planning issues with pre 1920's construction. There was one bullet point under the external solid wall insulation information that simply stated, 'may need planning permission' (Energy Saving Trust, 2013a). Therefore, although thermal improvement measures were suggested, the site did not assist an applicant in understanding whether or not solid wall insulation will be allowed by their LPA, and instead directs them back to the

Figure 10.8 : Energy Saving Trust insulation page (Energy Saving Trust, 2013a)



LPA for guidance. Although beyond the scope of this research, this finding suggests that even when external sites are used, they may not provide information to improve applicant confidence with regard to obtaining planning permission, as planning is a local process.

10.3.1 Summary

The findings of the Council sitemap diagrams exposed issues regarding how Councils communicate information regarding energy efficient retrofit, and what information is available. This work provided evidence that:

- there were inconsistencies in information;
- similar information was not always located in the same place in different Councils;
- users may not be directed to relevant information depending on how they interact with the websites;
- and, different advice was given by different Councils.

However, the complex and qualitative nature of the mapping made it less ideal for further investigation, as the interpretation would be dependent on the judgement of the researcher, and would be difficult to validate. Having found evidence of specific problems, a new method was sought that would focus on these issues, and allow for a more measured and reliable assessment. A keyword search using the academic search engine

Scopus, was used to search for academic work addressing information relevance, appropriateness, consistency, and connectivity. From these searches, work from the Information Management discipline was found, which uses established research methods to investigate what is called *Information Quality*. The next Section describes how building on the evidence found from the Council sitemaps, an information quality assessment method was adapted to further compare and examine the differences in Council guidance.

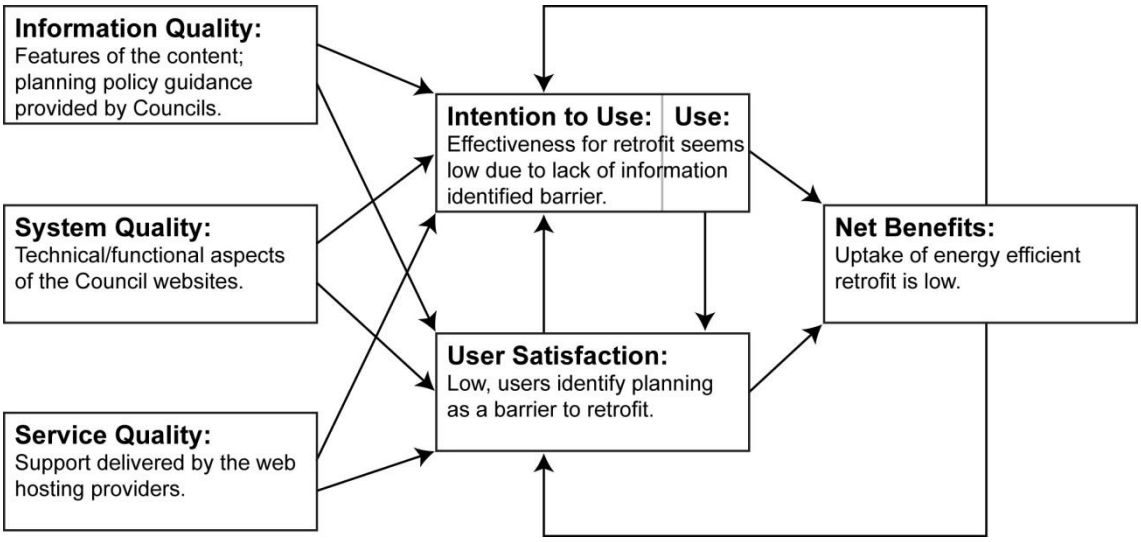
10.4 Information Quality research method development

The discipline of Information Management identifies complex systems of data as Information Systems (IS). An IS is a system that includes the interaction between technology, data, and the people who use the data to make decisions. In particular, IS research is interested in both the technical creation of these complex systems as well as their social consumption (Kling, 1991).

Irani, et al. discuss the rise of e-Government, and the challenges associated with it. They identify that in the rapid growth of e-government, '*little consideration has been given to strategically evaluating their information systems*' (Irani, Love, Elliman, Jones, & Themistocleous, 2005). Planning, as an e-Government component, is an IS since: it is delivered through the world wide web and e-governance (technology); it delivers data in the form of policy and guidance; and it is used by both those seeking to develop and submit planning applications and by those who assess those applications (people). Traditionally, IS assessment is used to better understand the management and operation of a single system. For example, in the context of this research, traditional IS assessment would traditionally be used to better understand the information delivery of a single Council. This dissertation uses IS assessments in a new way to develop insight regarding the larger national system of planning by focusing on the comparison of multiple local Councils, and adapting existing IS assessment tools to this task.

The first stage of adapting the IS investigation to this research, was to identify how planning fit within an existing IS assessment framework. The DeLone and McLean model for IS success measurement is a widely adopted tool for understanding the functional components of an IS and how they relate to one another. The model and its ten-year revision have been used and tested by over 300 peer reviewed research studies (DeLone & McLean, 2003; Petter, DeLone, & McLean, 2008). In their ten-year review of the original model, DeLone and McLean stressed the importance of context for understanding the measure of success. Figure 10.9 shows the revised DeLone and McLean model contextually applied to looking at planning with regard to thermal performance improvement of existing buildings.

Figure 10.9 : Applied IS success model adapted from (DeLone & McLean, 2003)



Typical research design that uses the DeLone and McLean model tests single directional relationships in the model, applied to a specific context. Parting from the standard use, this research accepted the causal relationships in the model and instead used it in a specific context to justify and support the investigation of 'where and what the problem may be'. The reviewed literature from Chapter 3 and results of the first phase of the research were applied to the model. This identified that within the research planning context, the *use*, *user satisfaction*, and *net benefits* were low. Therefore, the causal relationships in the model suggest that this is due to low performance in the *service quality*, system *quality*, and/or *information quality* components.

These three components were each examined for their appropriateness for comparative research. *Service quality* deals with the support of a specific website, in this instance a single Council, and so was not considered appropriate for comparative research. *System quality* also addresses the features of an individual website including intuitiveness, sophistication, flexibility, and response times (Petter et al., 2008) as well as website design, access convenience, ease of use, and reliability (Lin, 2007). While it is possible to compare these features, the primary focus is still on the technical qualities of an individual website, and so was also not selected as appropriate for furthering this research. This does not imply that *service quality* or *system quality* are not potentially influential reasons for low *use* and *user satisfaction*, but instead that they would be better examined individually for each Council.

Information Quality (IQ) addresses the desirable characteristics of the system outputs (Petter et al., 2008). This has been also been defined as the quality of the 'content' (DeLone & McLean, 2003) or information that is 'fit for use' (Knight, 2011; Wang & Strong, 1996). Knight identifies three critical components of the 'fit for use' paradigm: that IQ is

relative with quality being directly related to the specific use; that IQ incorporates the *action* of both the reasons for information production and retrieval as well as how users interact with and value-judge information; and that IQ is *context* driven and cannot be defined and assessed outside of the reason for which it exists (Knight, 2011). These qualities aligned with the findings from the sitemap diagram research. Therefore, IQ was selected as the best component to compare Council websites for their advice regarding energy efficient conservation retrofit.

To develop a specific IQ assessment for this research, existing frameworks for classifying and assessing IQ were examined. Despite the variety of research frameworks developed for IQ, there were regular, specific, and measureable elements identified in the literature as being important *dimensions* of IQ. Knight compared 21 IQ frameworks and showed that framework dimensions tended to be consistent, with 16 dimensions being the most common (Knight, 2011). After a review of the available frameworks, the one developed by Naumann and Rolker, as shown in Table 10.2, was selected for this research. Their framework was focused on 'the perception of the user, the information itself, and the process of accessing the information', which they designate the subject, process, and object criteria (Naumann & Rolker, 2000).

Table 10.2 : Selected IQ framework and definitions (Naumann & Rolker, 2000)

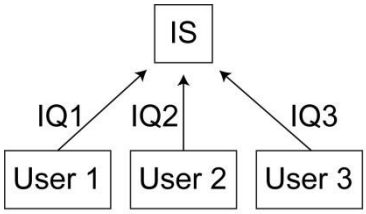
Assessment Class	***IQ Dimension***	***Description***
Subject-Criteria: The User	Believability	Degree to which the information is accepted as correct. Also: error rate, credibility, trustworthiness
	Concise Representation	Degree to which the structure of the information matches the information itself. Also: attribute granularity, occurrence identifiability, structural consistency, appropriateness, format precision
	Interpretability	Degree to which the information conforms to technical ability of the consumer. Also: clarity of definition, simplicity
	Relevancy	Degree to which information satisfies the users need. Also: domain precision, minimum redundancy, applicability, helpfulness
	Reputation	Degree to which the information or its source is in high standing. Also: credibility
	Understandability	Degree to which the information can be comprehended by the user Also: ease of understanding
	Value-Added	Amount of benefit the use of the information provides.

Process-Criteria: The Query Process	Completeness	Quotient of the number of response items and the number of real world items. Also: coverage, scope, granularity, comprehensiveness, density, extent
	Customer Support	Amount and usefulness of online support through text, email, phone etc.
	Documentation	Amount and usefulness of documents with meta information. Also: traceability
	Objectivity	Degree to which information is unbiased and impartial.
	Price	Monetary charge per query. Also: query value-to-cost ratio, cost-effectivity
	Reliability	Degree to which the user can trust the information. Note: *technical* reliability is synonymous to *availability*.
	Security	Degree to which information is passed privately from user to information source and back. Also: privacy, access security
	Timeliness	Age of information. Also: up-to-date, freshness, currentness
	Verifiability	Degree and ease with which the information can be checked for correctness. Also: naturalness, traceability, provability
Object-Criteria: The Information Source	Accuracy	Quotient of the number of correct values in the source and the overall number of values in the source. Also: data quality (as opposed to information quality), error rate, correctness, integrity, precision
	Amount of Data	Size of result. Also: essentialness
	Availability	Percentage of time an information source is ``up''. Also: accessibility, reliability, retrievability, performability
	Consistent Representation	Degree to which the structure of the information conforms to that of other sources. Also: integrity, homogeneity, semantic consistency, value consistency, portability, compatibility
	Latency	Amount of time until first information reaches user. Also: response time
	Response Time	Amount of time until complete response reaches the user. Also: performance, turnaround time

Naumann and Rolker assign and discuss a number of different assessment methods to each individual IQ dimension. Because IQ assessment is context dependent and often user-driven, many of these assessment methods utilise the statistical analysis of data from multiple end-users interacting with a specific IS. This is intended to provide a robust measure of the individual IQ dimensions, and overall IQ, by averaging multiple perspectives obtained through each individual users' IQ scoring. This traditional method of IQ assessment is represented diagrammatically and mathematically by Figure 10.10.

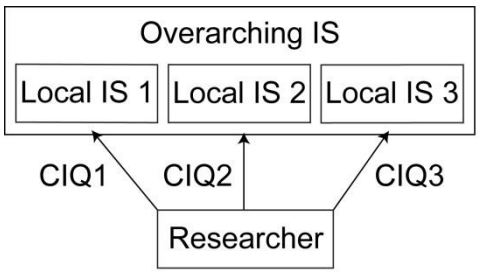
For this research, a different approach was developed whereby a single-user perspective would be applied across multiple ISs; where each IS represented a single Council. This was done in order to ensure the same judgment-value was used to assess each IS for a fair comparison. The adapted method is supported by a similar approach used by Funilkul, et al. on their comparative investigation regarding e-Government IQ in Thailand (Funilkul, Chutimaskul, & Chongsuphajaisiddhi, 2011) and can be used to investigate *Comparative IQ* (C-IQ). C-IQ is proposed as particularly useful for investigating situations where multiple ISs, which are developed and managed individually, seek to deliver the same information from an overarching IS. Applied to this research, the overarching IS would be national government planning policy and objectives, and each local IS would be an individual Council. The results of the C-IQ scores by the researcher, can then be statistically analysed against the total number of local ISs to provide comparative measures. This new method of C-IQ assessment is represented diagrammatically and mathematically by Figure 10.11.

Figure 10.10 : Traditional IQ Assessment



$$\text{IQ Analysis} = \frac{(IQ1+IQ2+IQ3+\cdots)}{Total\ Number\ of\ Users}$$

Figure 10.11 : Comparative IQ Assessment



$$\text{C-IQ Analysis} = \frac{(CIQ1+CIQ2+CIQ3+\cdots)}{Total\ Number\ \text{of}\ Local\ IS}$$

The limitation of the C-IQ method is that although the resulting analysis is consistent, there may be bias on the part of the researcher. It is important to acknowledge that the view of the researcher may not correctly match the view of actual end users. To address this, the researcher should be informed by the literature and supplementary evidence to ensure that the perspective taken by the researcher was justifiable. A C-IQ analysis cannot be used to quantify an individual Council's IQ as this must be done using a traditional IQ assessment. The C-IQ analysis is only intended to detail and measure the range of differences between Council IQs.

10.5 Application of the C-IQ method

Of the three categories identified by Naumann and Rolker, shown previously in Table 10.2, this dissertation illustrates the assessment of the Subject-Criteria dimensions which specifically focuses on the perspective of the user, and aligns with the research undertaken in Chapter 6. Naumann and Rolker state that to correctly assess IQ criteria, a unit and range of measure must be agreed (Naumann & Rolker, 2000). In their study, Funilkul et al. used a yes/no question format providing both a frequency and a percentage rating (Funilkul et al., 2011). In the specific case of looking for consistency, this question type and range was considered appropriate. 'No' answers were given a score of 0 and 'Yes' answers were given a score of 1 with some answers that did not neatly fit either yes or no given an explanation and rationale for their weighted score. Comparatively, rating percentages closest to 0% or 100% showed trends towards consistency and percentages closer to 50% showed divergence. However, not all questions fit the yes/no paradigm. A second question type was developed based on a straightforward numeric count allowing for mean and range analysis. Two of these questions were further expanded to consider range and frequency analysis of the word-based responses that were used to complete the numeric counts.

In developing the C-IQ questions for this research, the dimensions of *Believability* and *Reputation* were combined as well as *Interpretability* and *Understandability* as they were considered similar in this context. The dimension of *Value-Added* was not considered appropriate for comparison analysis as it depends on a specific individual user and would be impossible to generalize using this method. Development of the questions required a good understanding of the available components of the Council websites, obtained from the sitemap diagramming exercise, and focused specifically on the factors that could impact thermal envelope improvement planning conservation applications. The developed questions therefore focused on three specific areas: planning policy and applications; building control and applications; and energy efficiency improvements.

10.5.1 C-IQ question development

The *Believability/Reputation* dimension addresses the credibility and high standing of the information presented (Knight, 2011; Naumann & Rolker, 2000). Q1 assessed if the information presented seemed reliable, trusted, and true; and if it seemed official. Q2 assessed if the information presented seemed certain, or if it encouraged doubt or questions. The value of the analysis of this dimension comes from the consistency of the measurement across Councils but is not appropriate for indicating the individual measure of any single Council. The two questions developed were:

1. Is the information provided in an authoritative manner?
2. Is the information provided in a confident manner?

Concise Representation is concerned with the structure and compactness of how the information is presented and how easy it is to understand (Knight, 2011). Questions were developed to address the compactness of various aspects of planning, building control, and energy efficiency information by counting how many pages contained relevant information on key topics. The assessment also structurally looked at which Council departments the pages were located under. The eight questions developed were:

3. How many pages contain information on planning policies?
4. How many pages contain information on planning applications?
5. How many pages contain information on conservation and heritage?
6. How many departments are the above pages located in?
7. How many pages contain information on building control applications?
8. How many departments are the above pages located in?
9. How many pages contain information on energy savings or energy-sustainability issues?
10. How many departments are the above pages located in?

The *Interpretability/Understandability* dimension addresses the ability of the user to comprehend the information provided (Knight, 2011; Naumann & Rolker, 2000). Q11 focused on the limitation of the use of technical jargon or industry specific phrases which non-industry specialists may not be familiar with or understand. Q12 looked for instances where technical terms were unavoidable and whether or not explanations were provided either on the page the term was located on, or through a glossary. Similarly to Q1 and Q2, these questions cannot measure the individual IQ for any Council but instead explore the comparative IQ by looking for consistency of the dimension across Councils. The two questions developed were:

11. Is the information provided in laypersons terms?

12. Are the technical terms used adequately explained?

The *Relevancy* dimension addresses whether or not the information satisfies the users need and is applicable or helpful for the task at hand (Knight, 2011). There are many tasks involved in developing an energy efficient conservation retrofit project. Five specific tasks were identified where users would need unique information for conservation retrofit. The first set of questions looked at information that assists with understanding how to obtain planning and building control permissions. The two questions developed were:

13. Is clear and specific information provided on the planning application process?

14. Is clear and specific information provided on the building control application process?

The second set of *Relevancy* questions looked at the provision of specific information on energy efficient retrofit for conservation properties; if any conflicts between energy efficiency and heritage were discussed; and if Councils encouraged contacting an officer to assist with determining appropriate interventions. Consideration was also given to what (if any) external sites were referred to for additional information. In particular, Q17 sought to understand how consistently EH was used by the Councils, specifically because EH has produced specific national guidance on energy efficient retrofit to heritage properties (English Heritage, 2010). The five questions developed were:

15. Is specific information/guidance provided on energy efficient retrofit for heritage buildings?

16. Are external sources used for advice on what energy efficient retrofit measures are appropriate for heritage properties?

17. How many external sites do they link to and what are they?

18. Is information provided on the conflict between energy efficient improvements and conservation?

19. Does the Council suggest contacting a planning officer for help with energy efficiency improvements for conservation properties?

The third set of *Relevancy* questions looked at the clarity of key policy delivery affecting energy efficient retrofit with a focus on permitted development rights, the integration of use of the Planning Portal, and use of Article 4 directions (discussed in Section 4.2.3). The Planning Portal has detailed, standardized, and nationally applicable information about PD as well as extensive guidance and information on the planning and building control processes. Q21 and Q25 were particularly interested in how consistently nationally provided information was disseminated at the local level. The six questions developed were:

20. Is specific information on permitted development provided?

21. Does the Council link to the Planning Portal interactive house?

22. Does the Council use Article 4 Directions?

23. Are Article 4 Directions explained?

24. How many Article 4 Directions are there?

25. Does the Council link to the Planning Portal at all?

The fourth set of *Relevancy* questions sought to examine the relationships between planning, building control, and energy efficiency with respect to if a user would be directed from one to the other. While examining the Council websites it became clear that important information, applicable and useful to those undertaking energy efficient conservation retrofit, was present in all three of these areas and often dependent upon one another. For example, as explained in Section 4.2.1, Part L1B 3.6-3.14 and L2B 3.5-3.13 of the *Building Regulations 2010*, which cover the conservation of fuel and power, grant exemptions for conservation properties. Therefore, these questions examined whether a user was provided with the information they needed to successfully develop an energy efficient retrofit project by being directed to the appropriate parts of the site from each other. The six questions developed were:

26. Is there a link from planning information to energy efficiency advice?

27. Is there a link from building control information to energy efficiency advice?

28. Is there a link from planning to building control?

29. Is there a link from building control to planning?

30. Is there a link from energy efficiency advice to planning?

31. Is there a link from energy efficiency advice to building control?

The fifth and final part of the *Relevancy* dimension comparison looked at what specific energy efficiency measures were identified and promoted by the Councils. This question was assessed both for the total number of measures suggested as well as for the measures themselves. The question developed was:

32. How many energy efficiency measures are promoted?

10.6 Results and discussion of the C-IQ assessment

The full results of the C-IQ Assessment can be found in Appendix K. The results show that there are clear areas of consistency and clear areas of divergence in the comparative Council IQ with regard to planning, building control, and energy efficiency for conservation retrofit. The areas of consistency identified in this study can illustrate what Councils were doing well; where their message was clear; and may provide a template for

improving the areas of divergence. The areas of divergence identified support the findings of the earlier sitemap exercise, and show that with respect to energy efficiency conservation retrofit advice, the information coming from Councils was not clear, and the delivery was inconsistent. Based on the DeLone and McLean IS success model, this may suggest a rationale for: the low standard in *Use*, *User Satisfaction*, and *Net Benefit*; planning being perceived as a barrier to thermal performance improvements of conservation properties; and the low uptake of retrofit measures.

The areas of consistency included the *Believability/Reputation dimension (Q1, Q2)*, which showed that Councils conveyed a uniform level of authority and confidence, and the *Interpretability/Understandability* dimension (Q11, Q12), which showed that Councils appeared to be good at communicating to diverse groups of stakeholders. Both of these qualities suggest Councils were capable of conveying believable and clear messages about energy efficient retrofit.

Certain components of the *Relevancy* dimension also showed consistency. In particular, information on the application processes for planning and building control (Q13, Q14) were clearly communicated across all of the sample Councils. This is supported by consistency in the number of departments where the information on planning and building control was located (Q6, Q8), making it easy to find and navigate. Additionally, the consistency of use of the Planning Portal to support general planning information (Q25) shows how a national initiative can be used to help provide a layer of consistency to information delivery.

Although there was good consistency in the *Relevancy* dimension of planning and building control application information, a closer look at the *Concise Representation* dimension showed divergence. The structure of Council information on planning policy (Q3), planning applications (Q4), conservation and heritage (Q5), and building control applications (Q7) was divergent, meaning that similar information was located in different pages, and organized or presented in different ways across the Councils. This has possible implications for cross-Council communication amongst stakeholders; as knowledge of each individual Council web-structure is required for directing individuals to specific information.

Another area with moderate consistency was found in examining the *Relevancy* dimension with regard to planning policy with a focus on PD. 11 of the examined Councils used Article 4 directions to restrict PD rights (Q22). Only seven provided a good explanation of what PD rights are themselves (Q20) although 10 linked to the Planning Portal interactive house (Q21) which uniformly explains PD for home owners. Conveying the PD to applicants is important for retrofit projects as it clarifies what is allowed without

permission. The widespread but divergent use of Article 4 directions (Q24) shows a tension between the Government's expansion of PD in order to encourage development at a national scale, and the requirements of local Councils to uphold their planning responsibilities towards the care of the local environment by placing restrictions on them.

The lack of connections between planning, building control, and energy efficiency information showed moderate consistency, however, this illustrated an example where consistency was not beneficial (Q26-Q31). The most common connection was a link from planning to building control (Q28), but this was found in only six Councils. The least amount of connections were found between building control and energy efficiency information in both directions, each found in only two Councils (Q27, Q31). Even though it is explicitly part of the Building Regulations that planning should be consulted for meeting Part L requirements for heritage properties, only four of the Councils provided a connection from building control to planning (Q29). Similarly, the lack of links between building control and energy efficiency advice means building owners may not benefit from information that could help them to meet their Part L obligations. This silo approach to information exposes a fundamental issue in the *Relevancy* IQ dimension amongst the sample Councils. Information is generated and maintained by different departments or groups within each Council; and it is clear that to meet national objectives for more thermal envelope improvements, greater effort should be made to integrate information. The consistent lack of connectivity is likely to lead to an imperfect or incomplete message being conveyed to the applicant. Clarity of the issues and impacts at an early stage can give the user confidence that they understand the broader picture, and the key opportunities and challenges.

One of the fundamental problems with the promotion of energy efficiency by the Councils, is related to the diversity of the website audience. In addition to home-owners, Councils must also consider the energy issues of local businesses and residents who may or may not be looking to improve their energy efficiency and who may not have the option of making changes to their building. The problem created by the challenge of addressing the needs of multiple users is supported by the divergent scores in the *Concise Representation* dimension showing that Councils had anything from 4 to 52 different pages regarding energy savings or energy-sustainability information (Q9) and that those pages could be located in anywhere from one to four different Council departments (Q10). This leads to relevant information for retrofit being located in inconsistent locations.

The identified areas of high divergence were all associated with energy efficiency and conservation retrofit, mostly in the *Relevancy* dimension. Only four of the Councils provided specific information on energy efficient heritage retrofit, while two others gave

guidance on window improvements only (Q15). Interestingly, there was no clear relationship between the percentage of Council covered by conservation areas (from Table 6.1) and the likelihood of having specific guidance. Only five Councils identified that there may be conflicts between energy efficient retrofit and conservation (Q18) or encouraged contacting a planning officer to discuss energy efficient improvements to conservation properties (Q19).

The use of EH as an external source for information on conservation retrofit showed a reasonable amount of consistency amongst the Councils. 11 Councils linked to external sites for additional information on retrofit of conservation properties; 10 of those linked to EH; and, seven of those only linked to EH and no other sites (Q17). This again shows how a national body can provide some degree of consistency. However, unlike planning and building control information, the thermal improvement information provided by the individual Councils was highly divergent. This suggests that although Councils are likely to link externally to EH, they have either not locally incorporated EH information on thermal improvement into their own pages, or the information provided by EH is not clear enough to be incorporated consistently. This may also be related to the finding from the sitemap diagram exercise that found the most common external link used for energy efficiency information was the Energy Saving Trust, show previously in Figure 10.7. This supports the results of the applicant survey, discussed in Section 7.4.2, where a desire was expressed for better integration of conservation and energy efficiency guidance and advice. Investigating organisations outside of planning is beyond the scope of this work, however, it is clear that more research is needed to identify and understand the various sources, contents, and impacts of external guidance for conservation retrofit.

The energy efficiency measures promoted by the Councils illustrated the challenges of addressing the needs of diverse end users, and highlight a fundamental problem regarding the promotion of thermal envelope improvements (Q32). The most common measures to improve energy efficiency suggested by the sample Councils were the no-cost and low-cost tips, which were not particularly relevant to retrofit. No-cost tips included suggestions such as: turning down thermostats; turning lights and appliances off when leaving a room; washing clothes at 30°C; and only boiling enough water as needed for a cup of tea. Low-cost tips included suggestions such as: insulating the hot water tank; switching to energy efficient light bulbs; using radiator reflectors; and using thermal curtains. In respect to building improvements, the most common measures promoted were loft insulation and new heating systems, each promoted by 10 Councils. Only two Councils specifically identified solid wall insulation as a measure, although six other Councils generically promoted ‘insulating your home’. Four Councils only suggested

cavity wall insulation, which excludes most historic properties; and one Council did not suggest any wall insulation at all. The improvement of windows, which received the most attention through specific policy advice and guidance notes, was only promoted by seven of the Councils. This shows that thermal envelope improvement measures are not consistently identified or promoted amongst Councils. It also provides evidence that a lack of consistent information exists, particularly in relation to thermal envelope improvements, in support of the research hypothesis. This lack of consistent information could lead to mixed messages, conflicting advice, or a lack of understanding amongst the general public.

Addressing the inconsistencies identified by this research would require agreement between, and changes across, multiple Councils. However, assessing and understanding these issues, and ensuring consistency, requires a broader approach and authority than a local Council is granted. The results of this work support one of the key findings of Chapter 8, which highlighted a strong desire by planning officers for clearer national policy and guidance on energy efficient retrofit of conservation properties. Not having clarity at the national level, results in a diversity of local interpretation. The comparative information quality of the sample Councils provides reliable evidence of divergent information, supporting a key finding from Chapter 9, that there is a perception by users of inconsistency of both guidance and decision-making between Councils.

The results of the C-IQ assessment also identified how the use of a national system, like the Planning Portal, can help to create consistency and clarity of message, expressed by the level of consistency in the comparative IQ of planning and building regulations information and advice. This concept could be used to address information and guidance on energy efficient retrofit. Further research is needed to understand why this is not working through the existing national bodies, like English Heritage in the same way. If the thermal improvement of solid wall properties is a national priority, then steps must be taken at the national level to clarify what measures are promoted; and, how this priority combines with other national planning and building control objectives and requirements like heritage conservation.

While this research provides clear evidence that mixed and inconsistent messages exist, further research is required to understand their specific impacts, if any. It is also important to note that this research is limited by its use of 32 questions and its application to 13 Councils compared to the 193 District Councils in England. A wider application of the C-IQ method in respect to assessing planning information for energy efficient conservation retrofit may reveal other areas of inconsistency that are not represented by

this sample. It would also be beneficial to replicate the study with multiple researchers, to better understand the benefits and limitations of the single-researcher scoring approach.

10.7 Discussion of the C-IQ method

The C-IQ method provides a new way to systematically investigate, articulate, and address the comparative qualities of information disseminated through a complex Information System. The C-IQ method is particularly suited to investigating any IS where wider objectives must be delivered by individual and independent, or semi-independent, entities.

More research is needed to refine and continue to define the C-IQ dimensions, compared to the traditional IQ dimensions, and to further develop the assessment tool. This method has the potential to benefit information researchers, policy-makers, and large-scale organizational managers, amongst others. It does so by helping them to measure and manage local information delivery, and to compare it against broader information development and intent.

This research illustrates how local ISs can be compared against each other to provide information regarding the amount of consistency and inconsistency between them. Future applications of the C-IQ method could involve the development of an ideal measure by the overarching IS, which the local ISs could compare themselves against. In order to do so, it may also be beneficial to develop a C-IQ assessment alongside a traditional IQ assessment, so that there was synergy between the actual perceived usefulness of an individual website by its users, and the overarching ideal standards put forth by the overarching IS.

10.8 Conclusions

The second phase of the dissertation research has presented the comparative analysis of Council website information regarding planning, building control, and energy efficiency information. This was done to identify why Councils were perceived by users as giving inconsistent information, so that it can be addressed. The research included the development of a *Comparative Information Quality Assessment* method, based on work done in the field of Information Management, and was applied across 13 London Councils. Key findings of this work included that:

- Councils are well situated for, and experienced with, communicating with a diverse group of stakeholders. This, along with their natural position of authority

makes them well suited to locally delivering information regarding national objectives.

- Information on planning and building control tended to be more consistent across the Councils and was likely due to the use of national entities like the Planning Portal or the Building Regulations.
- Information provided on permitted development rights was not clear, nor consistent.
- The use of Article 4 directions to restrict PD in conservation areas, was widespread.
- There was a consistent and significant lack of connectivity between planning, building control, and energy efficiency information within the Council websites.
- Most of the Councils did not provide guidance on the thermal improvement of conservation properties, or identify potential conflicts between conservation policy and thermal envelope improvements.
- The energy efficiency measures most promoted by the Councils were not related to building performance.
- The building performance improvement measures promoted by the Councils were inconsistent; and, solid wall insulation in particular was not well promoted.

11 CONCLUSIONS AND RECOMMENDATIONS

The dissertation research has sought to answer the question, 'Why is planning perceived as a barrier to the thermal improvement of conservation properties, and how can it be addressed?'. The work presented has provided some answers to this question, and through the work, has identified additional areas for further research.

One of the most significant findings of this research was that:

- The perception of planning as barrier is supported by evidence that planning advice and decisions have restricted the thermal improvement of some conservation properties in England.

Through the literature and data collected from both applicants and assessors, this research has identified a number of examples where the application of the planning process has kept projects from achieving the energy efficiency improvements desired. Planners must make decisions between two different agendas – energy efficiency and conservation. The way these decisions are made and advice is given can be widely inconsistent, making the process of obtaining planning permission unreliable. This research finds that it is this lack of consistency and reliability that primarily leads to planning being perceived as a barrier.

This research also found a great deal of animosity and mistrust between those who apply for, and those who assess applications. In order to move forward, there needs to be better understanding and communication between applicants and officers about their perspectives and objectives. As planning is a government system, it is not helpful for government to perceive applicant complaints about the planning system as simply

complaints about not getting the development the applicants want. This research has shown that certain perceptions regarding the 'problems with planning' are valid; but more significantly, with knowledge and motivation, improvements can be made.

11.1 Why is planning perceived as a barrier?

One of the significant issues raised by this research is to consider how barriers are identified and articulated in the literature. As was discussed in Section 3.3, there has been substantial academic work to identify theory-based barriers to energy efficiency. However, some barriers that were perceived or found in the practice-based literature were not as clear, nor as well researched. This can cause a knowledge disconnect between academic and empirical barriers, and by extension, a disconnect between academic research and applied empirical value. By example, this research has found that 'planning' as a barrier is a terminology that encapsulates a number of distinct issues, all contained within the planning system. While industry stakeholders may perceive the barrier as 'planning', academic researchers may better understand the barriers as:

- 'Imperfect information', evidenced by the research in Chapter 10, showing that due to the lack of weblinks, information regarding thermal envelope improvements was not readily available to planning applicants on Council websites, if the Council had any information on thermal improvements at all. Particularly for applicants who may not be aware of thermal improvement measures, this may lead to energy efficiency opportunites being missed.
- 'Bounded rationality', evidenced by the research in Chapter 7 and Chapter 8 showing that planning officers do not have enough time to give to their projects, or to undertake training in order to stay up-to-date on available technological solutions. This can lead to a reliance on outdated information, rules of thumb, and non-optimised decisions.
- 'Form of information', evidenced by the research in Chapter 10, showing that information regarding thermal envelope improvements is not always provided in the most accessible places, making it difficult to find, and not necessarily available at the appropriate time. In addition, the inclusion of thermal improvements to buildings under general energy efficiency information results in diluted and non-specific information, again making it difficult to find and extrapolate. These issues may lead to fewer projects incorporating proposals for thermal improvements.
- 'Credibility and trust', evidenced by the research in Chapter 7, Chapter 8, and Chapter 9 showing that there was mistrust and even animosity between applicants

and assessors. If applicants do not believe that assessors are knowledgeable and up-to-date regarding technologies or policies, they may defer to less contentious proposals to avoid time-delays due to disagreements. If officers do not trust that applicants will deliver stated objectives through projects, they may reject applications. This may result in a reduction in the number of thermal envelope improvement proposals put forward, as well as a reduction in the number of thermal envelope improvement applications approved.

- 'Inertia', evidenced by the research in Chapter 8, showing that conservation officers in particular, who are tasked with protecting the historic built environment, are often skeptical regarding thermal envelope improvements either due to concerns regarding the effectiveness of the technologies, or the net benefit of improving these properties as opposed to non-historic valued properties. All of which may result in a bias towards conservation objectives, reducing the number of approved thermal envelope improvements.
- Or, 'Values', evidenced by the research in Chapter 8, suggesting that there are no planning officers who are specifically tasked with improving environmental values, as this component of projects is generally addressed through the building regulations. A lack of individuals who prioritise environmental values within the planning system, may reduce the promotion of energy efficiency measures through planning.

These findings represent some of the reasons why planning is perceived as a barrier to the thermal improvement of conservation properties, and confirms the previously discussed understanding within the barriers literature that one real-world phenomenon may be explained by several of the theoretically derived barriers. However, broken down to this level, they also do not capture the whole picture.

While there are many discreet individual barriers that make up the planning barrier, the research presented in this dissertation found that the two primary stakeholder groups, the applicants and the assessors, had different, practical reasons for perceiving planning as a barrier. As was illustrated by the work presented in Chapter 7, the key barriers attributed to planning by applicants were:

- A lack of consistency and reliability in the planning application process.
- A lack of certainty regarding what thermal improvement measures are allowed by planning.

- Conflicts between energy efficiency and conservation objectives in both policy and guidance.

As was illustrated by the work presented in Chapter 8, the key barriers attributed to planning by assessors were:

- A lack of clear guidance on how to integrate national objectives for energy efficiency and conservation.
- The broad diversity of available energy efficiency and conservation guidance.
- The lack of resources available to give to projects.

While these empirically identified barriers may be broken down to further discreet theory-based barrier components as illustrated above, in order for them to be addressed, it is the position of this research that they must be conceptualised in their entirety.

When the stakeholders perspectives were compared in Chapter 9, additional insight into how the planning barrier affects projects was gained. Both applicants and officers identified that there were:

- inconsistencies in information and decision making between Councils in respect to the assessment of conservation applications.

This issue can be seen as being both a natural extension of the discretionary planning system but also the resultant outcome of the key user barriers identified above. The lack of consistency and reliability in the planning application process is exacerbated by different decisions being made by different Councils. This can result in a lack of certainty regarding what thermal improvement measures are allowed. The diversity of available guidance, and the lack of overarching national guidance on how to integrate energy efficiency and conservation objectives results in policy and guidance conflicts, and diverse local interpretations.

11.2 Addressing the planning barrier

To address these planning barriers, a top-down approach is proposed by this research, as many of the individual barriers identified are linked by overarching themes. The inconsistency in Council information was selected as the point for further investigation, as it captured a key moment in the planning hierarchy. From national policy and guidance, Council policy and guidance is the first step towards implementation, and the first interpretation and rephrasing of the national information. This transition is where the evidence presented in this research suggested the divergence started to appear. If issues

in Council consistency could be addressed, then subsequent levels of barriers may no longer be relevant, as many stemmed from this point.

In order to compare Council guidance reliably, a new research method had to be developed. The Comparative Information Quality Assessment adapted from the discipline of Information Management allowed for a rigorous and thorough comparison of how planning and energy efficiency information was delivered online between Councils. The C-IQ assessment found a number of critical issues with respect to the diversity of information delivery across the Councils reviewed, as well as issues related to information delivery in general with regard to the thermal improvement of conservation properties.

Key findings of this work specifically related to policy and guidance were taken from the work of Chapter 8 and validated by the work in Chapters 10. This research found that:

- There is a lack of clarity in national policy and guidance.
- There is a lack of consistency in the advice given across Councils.

This results in the hypothesis that clear national policy and guidance leads to a more uniform local delivery; and a lack of clarity leads to assorted interpretations and inconsistent decisions. Therefore, in order to address the planning barrier, Councils need a more mutually consistent approach.

While applicants also noted confusion regarding how policy objectives regarding energy efficiency and conservation should be combined, it was the assessors, whose job it is to apply policy, who strongly felt that better national guidance was needed. The work in Chapter 10 provides evidence that national initiatives like the Planning Portal or the Building Regulations help to ensure that local interpretation and delivery of planning are consistent. This is particularly true for areas of planning for which there are no identified conflicts, for example, the planning application process.

However, the work of Chapter 10 also highlighted specific areas that are lacking in national clarity and therefore had the most diverse interpretations across the local Councils. Therefore, in order to address the planning barrier to the thermal improvement of conservation properties, the following recommendations are made:

- **National information regarding permitted development rights for the thermal improvement of conservation properties needs to be clarified.** High levels of inconsistency were found between how Councils, and individual Officers, interpreted what was PD and what they could control through planning applications. This issue was also somewhat complicated by the widespread use of Article 4 Directions. However, often those Directions were equally unclear with

respect to what they did or did not control. As many thermal envelope improvements fall under PD, it would be helpful to clarify what is and is not allowed at the national level. This research has shown that deferring the interpretation of these matters to local authorities leads to inconsistent outcomes.

- **National guidance is needed for how thermal improvements affect conservation properties, what measures are most acceptable, and how conflicts should be assessed.** Although the now superseded PPS5 suggested that local authorities provide specific guidance for the sustainable improvement of heritage properties, few of the Councils reviewed in this research had done so. Although there are local variations in construction typologies in the UK, there are also many similarities. For example, Victorian terrace housing is of a generally similar construction type across a large number of Councils. Instead of tasking every local Council with developing guidance on how to sensitively address local heritage, national guidance could be developed and provided for most construction types. This could either then be used as a template for each local authority to modify based on local context, or managed by a national body who would coordinate input from all of the local authorities. This would help to provide uniform advice on what thermal envelope improvement measures are most appropriate, and also highlight potential areas of conflict. It is also important, as per the input from applicants discussed in Chapter 7, that this advice be prepared jointly with both national conservation and energy efficiency bodies, so that it holistically reflects national objectives.
- **The assessment of energy efficiency measures for conservation properties needs to be formally adopted into the planning application review process.** If decisions regarding thermal improvements to conservation properties are to stay within the control of planning, as opposed to building control, then guidance for the assessment of thermal improvements must be incorporated into planning guidance and practice. Currently, energy efficiency assessment is addressed by building control, which is separate to the planning regime. Additionally, conservation officers are not responsible for the assessment of energy efficiency matters, and are not trained to do so. This results in advocacy for conservation, but a lack of advocacy for energy efficiency within planning. If it is a national objective to reduce energy demand in conservation properties, trained and qualified advocates must be present within the planning process. Otherwise, other designated priorities, like conservation, which are already incorporated, will take precedence.

In addition, addressing two other findings from the C-IQ assessment could assist in addressing the planning barrier overall. Based on those findings, the additional recommendations are made:

- **Connectivity between Council departments needs to be improved in order to deliver robust information.** The C-IQ assessment found that information regarding planning, building control, and energy efficiency was not well integrated for any of the Councils assessed. This means applicants are likely to get incomplete information, and may account for fewer than expected thermal improvements to conservation properties.
- **Energy efficiency information needs to be developed specifically for existing building owners.** The energy efficiency measures promoted by the Councils was diverse, and generally not focused on building owners. Instead, information tended to be directed towards 'residents' and 'businesses' who may or may not own their buildings or be able to modify them. While Councils must provide information for different types of users, the lack of promotion of energy efficiency measures for building owners is a missed opportunity to promote desired measures. Additionally, this information should be paired with relevant grant and funding information which was also found to be poorly connected.

11.3 Areas for future research

This dissertation has begun to fill an identified gap in the academic knowledge, however, as an initial foray into this under-researched area, a number of additional and tangential areas for future work were identified.

One overarching complication is the interconnected nature of the multiple barriers to energy efficient retrofit discussed in Section 3.3. While this thesis looks specifically at planning, many other barriers affect the rate of thermal improvements. More work is needed to quantify the material impacts of individual barriers on the thermal performance of the existing building stock in order to better understand relevance and develop priorities.

One recurring issue throughout this research was to quantify energy use and emissions from the building sector. DECC uses 'domestic' and 'industry and commercial' categories, which make it particularly difficult to understand the energy use of commercial properties. Without better data, it is impossible to properly calculate potential savings. When multiplied across millions of properties, this is particularly significant.

Similarly, the measurement of the thermal performance of existing buildings, and in particular of those that are traditionally constructed, has been shown to be inaccurate. Again, this may have significant impacts when trying to calculate benefits of thermal improvements multiplied across millions of properties.

This research highlighted the differences between the theory-based understanding of barriers to energy efficiency compared to the empirically-based literature. Although the dissertation makes some progress towards addressing how to better integrate these two perspectives, more work could be done to improve the understanding of, and better address, identified barriers.

The dissertation research specifically looked at the perspectives of individual stakeholders who interact with the planning system. It did not use 'projects' as a unit of measure, which may have generated a different perspective. Single projects tend to incorporate multiple stakeholders, and future work could examine how different stakeholders on projects interact with the planning system, and how their role within the project affects their perspective on planning. This work could contribute to the work presented in this thesis by helping to target members of the project team who are responsible for decision-making. Relatedly, future work could also help to identify what factors contribute to the intention of applicants to improve the energy efficiency of their projects.

This research chose to compare Councils as this was an agreed issue by applicants and assessors, but did not focus on the perspectives of all of the assessors within one Council. Building on the work presented in this dissertation, future work could examine the diversity of assessor perspectives within the same Council, and what influences them. Relatedly, more work is needed to understand how Councils obtain information and how that information is disseminated to individual officers and decision-makers.

Focusing on the perspectives of individuals provided evidence of common issues, but also highlighted some inconsistencies of opinion, particularly between the applicant and assessor groups. Future work could look specifically at how applicants and assessors interact with each other and how this affects their perspective of the planning process; and whether the lack of consistent perceptions has an impact on the planning application process.

Both phases of the research highlighted the diverse number of sources of external guidance for conservation retrofit used by stakeholders and recommended by Councils. Although this research identified this diversity, it did not further examine it. Future research is needed to better understand the contents and impacts of these different

sources of guidance. This work could be done in conjunction with developing strategies to determine what guidance is most appropriate for specific projects or types of buildings.

Finally, this dissertation presented a new method for comparing the IQ of a number of Councils. However, the C-IQ assessment method has the potential for applications beyond the scope of this research. Future work is needed to refine and continue to define the C-IQ dimensions, compared to the traditional IQ dimensions, and to further develop the assessment method and tool.

11.4 Research Synthesis

This research has explored the perception of planning as a barrier to the thermal improvement of conservation properties in England. While this work begins to fill an identified gap in the knowledge, more research is required in this area for it to be addressed. Research into planning alone, as a barrier to thermal envelope improvements, will not address the complex and interconnected barriers that may be preventing the uptake of energy efficient measures. However planning, particularly for conservation properties, as a fundamental component of the retrofit process, also cannot be neglected.

Prior to this research, there may have been pervasive belief that the planning barrier was simply due to the inherent conflict between energy efficiency improvements and conservation objectives, and that these objectives were irreconcilable. Indeed, for those who hold conservation values to be paramount, there may never be an acceptable solution to modifying the original fabric of a building. However this research has shown that many passionate professionals on both sides of the argument believe that energy efficiency improvements can be made to conservation properties. This research suggests that in the desire to improve energy efficiency while respecting conservation values, it is not the inherent or technical conflict between these objectives that is the primary issue. Instead, it is how that conflict is addressed and expressed across hundreds of Councils and planning officers in England. The inconsistent way that advice is given, and that subsequently measures are allowed or not allowed, creates confusion. There is a lack of understanding regarding the quantification of *harm* and *benefit* for these projects with respect to both conservation and energy efficiency objectives. What is harmful and beneficial from a conservation perspective may be inversely true from an energy efficiency perspective. Without a common language for assessing the harm and benefit to the building in its entirety within the planning process, decisions and advice become subject to diverse interpretation. This makes it difficult to reconcile and deliver a holistic view of success – where both conservation and energy efficiency objectives can be equitably met.

The impact of this lack of consistency of decision-making, is that applicants may be confused or reluctant to pursue energy efficiency. Without clear policy and guidance, assessors may refuse projects for fear of doing harm. Without agreed standards for what measures are acceptable, manufacturers may not pursue investment in research and development for new products. Without national guidance, any organisation can promote or discourage measures as they individually see fit, leading to a confusing landscape of conflicting information and advice.

Positively, this work has shown that as the primary reason planning is perceived as a barrier is due to an issue of consistency, it is not insurmountable. There are a number of ways that consistency can be improved in the planning system. In particular, this research has identified that greater consistency can be achieved through better national policy and guidance. With stronger and clearer advice from central Government, it would be easier to ensure and measure that Councils, and the assessors within them, are aligned. Additionally, the new C-IQ method, while used in this research as a comparative tool only, could also be used by central Government to develop standards to which Councils could conform. Although this dissertation acknowledges that addressing the issue of consistency of planning decisions may lead to new planning challenges being identified, this is expected within the wider wicked problem of energy efficiency. When compared to the other identified barriers to thermal envelope improvement, it is noteworthy that planning as a government system has the potential to be addressed more simply and widely than the individual behaviours of 26 million UK householders; but only if the political will to do so is there.

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13 Appendices

Appendix A : APPLICANT SURVEY

UK Planning Views: Energy Efficiency & Conservation

UK Planning Views: Energy Efficiency & Conservation

Welcome, and thank you for coming to this survey!

This survey is for you, if you have had experience with retrofitting an existing building or buildings in England or Wales that have been subject to conservation planning opinion either: by being listed; being within or affected by a conservation area; or by being traditionally constructed.

The purpose of this survey is to better understand the experiences and attitudes of those who have been involved in the submission of planning application(s) or obtaining building consent for retrofit projects that are subject to conservation. Specifically this survey is interested in the experiences and attitudes of building owners and building industry practitioners towards National and Local Planning, Energy Efficiency Improvements, and Conservation Policy.

This research is being used as part of a PhD being undertaken at the University of Cambridge, Department of Engineering, Centre for Sustainable Development that is examining the apparent tension in UK Planning between energy efficiency and conservation in retrofit projects. This work is being funded by the UK Engineering and Physical Sciences Research Council (EPSRC) and international private property group Grosvenor.

This survey is comprised of eight sections and should take around 15-20 minutes to complete. All answers and identifying information are completely confidential.

As a thank you for your time, at the end of the survey you will be given the opportunity to enter in a draw for one of two prizes, either a bottle of champagne or an Amazon gift voucher (£50 value each).

This survey will be open and collecting responses until the end of January 2013.

**If you are a Planning Officer, are involved in the review of submitted applications, or are answering on behalf of a Local Authority and you would be interested in sharing your views,there is a separate survey for you. Please copy and paste the following link into your browser: https://www.surveymonkey.com/s/UKPOEEC

UK Planning Views: Energy Efficiency & Conservation

Survey Definitions

This survey specifically asks about your experience with retrofit projects on properties subject to conservation planning opinon.

For the purpose of this survey, "conservation affected properties" or properties "subject to conservation" means those buildings or properties that require consent, or are referred to conservation, or are subject to conservation opinion during the planning application process.

This includes all listed buildings, buildings in conservation areas, buildings adjacent to conservation areas and therefore affected by a conservation area; locally listed buildings, and some traditionally constructed buildings.

Traditionally constructed buildings are defined by English Heritage as, "Buildings with permeable fabric that both absorbs and readily allows the evaporation of moisture." For example, most properties built before 1919 and most solid wall properties. These buildings may not be listed, or within or affected by a conservation area, but may still be subject to conservation opinion.

Survey questions marked with '' require an answer.

***1. To begin the survey:**

◯ Please tick this box to show you have read and understood the definitions

UK Planning Views: Energy Efficiency & Conservation

About Your Job and Retrofit Experience

This section asks about the role you have had in retrofit projects, how many projects you have been involved in, and how many Councils those projects have been in.

Please note, if you are a Planning Officer, are involved in the review of submitted applications, or your experience is from a Local Authority perspective, there is a separate parallel survey for you to share your views. Please copy and paste the following link into your browser:
https://www.surveymonkey.com/s/UKPOEEC

***2. What is or has been your own primary role on retrofit project(s)?**
(please tick the most appropriate or most frequent if more than one)

- ◯ Individual building owner: homeowner/landlord
- ◯ Property owner: developer/manager
- ◯ Academic/Researcher
- ◯ Architect
- ◯ Building Surveyor
- ◯ Other (please specify)
- ◯ Conservation/Heritage Consultant
- ◯ Contractor
- ◯ Engineer: Structural
- ◯ Engineer: M&E
- ◯ Environment/Sustainability Consultant
- ◯ Facilities Manager
- ◯ Home Energy Advisor
- ◯ Planning Consultant
- ◯ Urban Designer

UK Planning Views: Energy Efficiency & Conservation

About Your Job and Retrofit Experience

This section asks about the role you have had in retrofit projects, how many projects you have been involved in, and how many Councils those projects have been in.

***3. What is the primary role of your company in respect to retrofit projects?**

- ◯ Owner/Developer
- ◯ Consultant
- ◯ Facilities Management
- ◯ Contractor
- ◯ Academic/Research
- ◯ Other (please specify)

***4. Describe the most common contractual role of your company when thinking of the retrofit projects you have been involved in (choose the best selection):**

- ◯ I or my company owns the property, sets the brief, and/or makes the final decisions.
- ◯ I or my company am usually hired directly by the building or project owner.
- ◯ I or my company am half the time hired directly by the building or project owner, and half the time sub-contracted to another consultant hired by the building or project owner.
- ◯ I or my company am usually sub-contracted to another consultant hired by the building or project owner.

***5. What statement best describes your current role within your company in regards to working on a retrofit project?**

- ◯ I am the lead (or sole) representative of my team or company on projects.
- ◯ I am a mid-level representative of my company, I work directly under the lead consultant and can sit in for them if required.
- ◯ I am an intern or entry-level representative of my company and am currently learning about the industry and my profession through experience on projects.
- ◯ I am a specialist within my organisation who consults the project lead or team.

***6. How many retrofit projects have you been involved in that were subject to conservation review or opinion?**

- ◯ 1
- ◯ 2-3
- ◯ 4-6
- ◯ 7-10
- ◯ More than 10

UK Planning Views: Energy Efficiency & Conservation

***7. For the above projects, how many different Councils have you dealt with?**

- ◯ 1
- ◯ 2-3
- ◯ 4-6
- ◯ 7-10
- ◯ More than 10

8. Additional work of the wider research project is specifically focused on comparing responses from the following London Boroughs. Although it is not necessary for your project(s) to have been in any of these Boroughs for you to contribute to this survey, please indicate if any of your projects from above have been in the following: (please tick all that apply, or leave blank if none)

- ☐ Camden
- ☐ City of London
- ☐ Greenwich
- ☐ Hackney
- ☐ Hammersmith and Fulham
- ☐ Islington
- ☐ Kensington and Chelsea
- ☐ Lambeth
- ☐ Lewisham
- ☐ Southwark
- ☐ Tower Hamlets
- ☐ Wandsworth
- ☐ Westminster

UK Planning Views: Energy Efficiency & Conservation

Academic/Researcher: About Your Job and Retrofit Experience

This section asks about the role you have had in retrofit projects, how many projects you have been involved in, and how many Councils those projects have been in.

***9. What is the primary role of your organisation in respect to retrofit projects?**

- ◯ Independent/Private Researcher
- ◯ Academic Institution
- ◯ Private Research Institution
- ◯ Other (please specify)

***10. Describe the most common role of your organisation when thinking of the retrofit projects you have been involved in (choose the best selection):**

- ☐ I or my organisation owns the property, sets the brief, creates the project, and/or makes the final project decisions.
- ☐ I or my organisation am hired as an adviser or consultant on specific retrofit projects.
- ☐ I or my organisation collects information from a variety of retrofit projects for our own research/work.
- ☐ I or my organisation collects information from a variety of retrofit projects for advising a client or funding partner on a particular sub-area or specialty related to retrofit.
- ☐ Other (please specify)

***11. What statement best describes your current role within your company in regards to working on a retrofit project?**

- ◯ I am the lead (or sole) investigator/researcher of my team or group on projects.
- ◯ I am a mid-level investigator/researcher of my team or group, I work directly under the lead investigator and can sit in for them if required.
- ◯ I am a student or entry-level investigator/researcher of my team or group, and am currently learning about the industry and my profession through experience on projects.
- ◯ Other (please specify)

***12. How many retrofit projects have you been involved in that were subject to conservation review or opinion?**

- ◯ 1
- ◯ 2-3
- ◯ 4-6
- ◯ 7-10
- ◯ More than 10

UK Planning Views: Energy Efficiency & Conservation

***13. For the above projects, how many different Councils have those projects been in?**

- ◯ 1
- ◯ 2-3
- ◯ 4-6
- ◯ 7-10
- ◯ More than 10

14. Additional work of the wider research project is specifically focused on comparing responses from the following London Boroughs. Although it is not necessary for your project(s) to have been in any of these Boroughs for you to contribute to this survey, please indicate if any of your projects from above have been in the following: (please tick all that apply, or leave blank if none)

- ☐ Camden
- ☐ City of London
- ☐ Greenwich
- ☐ Hackney
- ☐ Hammersmith and Fulham
- ☐ Islington
- ☐ Kensington and Chelsea
- ☐ Lambeth
- ☐ Lewisham
- ☐ Southwark
- ☐ Tower Hamlets
- ☐ Wandsworth
- ☐ Westminster

UK Planning Views: Energy Efficiency & Conservation

Academic/Researcher: Understanding the Priority for Energy Efficiency in Pr...

This section asks about the desire or priority for energy efficiency both in your organisation, and on the projects you have been involved in.

***15. When thinking about the organisation you represent (or yourself if sole owner or proprietor) would you say that it is a priority to improve energy efficiency on the project(s) you are involved in?**

- ◯ Yes it is a stated objective of my organisation to create more energy efficient buildings and environments.
- ◯ Although it is not a stated objective, there is a strong commitment to improving energy efficiency in my organisation and it is generally supported by the directors/owners/board of directors.
- ◯ Some individuals in my organisation are concerned with and prioritise energy efficiency on our projects but it is not generally supported or taken up by my organisation as a whole.
- ◯ No, my organisation is generally not concerned with energy efficiency.
- ◯ Other (please specify)

***16. When thinking of the retrofit project(s) subject to conservation that you have been involved in, was improving the energy efficiency of the building a stated objective of the project brief (this would include having a minimum BREEAM, EcoHomes or EPC target)?**

- ◯ Yes in all or almost all projects.
- ◯ Yes in most projects.
- ◯ Yes in about half of the projects.
- ◯ Yes but in only a few projects.
- ◯ No, this has never been a stated objective for any project(s) I have been involved in.
- ◯ I don't know.

***17. When thinking of the retrofit project(s) subject to conservation that you have been involved in, was improving the performance of the following thermal envelope components of the building listed below a stated objective of the brief? Improving thermal performance meaning improvements or upgrades to insulate better, reduce draughts, or improve air tightness.**

	No, this was not a stated objective.	Yes but in only a few projects.	Yes in about half of the projects.	Yes in most projects.	Yes in all or almost all projects.	Don't know or not sure.
Doors	◯	◯	◯	◯	◯	◯
Windows	◯	◯	◯	◯	◯	◯
Walls	◯	◯	◯	◯	◯	◯
Roofs	◯	◯	◯	◯	◯	◯
Ground	◯	◯	◯	◯	◯	◯

UK Planning Views: Energy Efficiency & Conservation

Individual Building Owner: Homeowner/Landlord Retrofit Experience

This section asks about the number of retrofit projects you have been involved in, and how many Councils those projects have been in.

***18. How many retrofit projects have you been involved in that were subject to conservation review or opinion?**

- ◯ 1
- ◯ 2-3
- ◯ 4-6
- ◯ 7-10
- ◯ More than 10

***19. For the above projects, how many different Councils have you dealt with?**

- ◯ 1
- ◯ 2-3
- ◯ 4-6
- ◯ 7-10
- ◯ More than 10

20. Additional work of the wider research project is specifically focused on comparing responses from the following London Boroughs. Although it is not necessary for your project(s) to have been in any of these Boroughs for you to contribute to this survey, please indicate if any of your projects from above have been in the following: (please tick all that apply, or leave blank if none)

- ☐ Camden
- ☐ City of London
- ☐ Greenwich
- ☐ Hackney
- ☐ Hammersmith and Fulham
- ☐ Islington
- ☐ Kensington and Chelsea
- ☐ Lambeth
- ☐ Lewisham
- ☐ Southwark
- ☐ Tower Hamlets
- ☐ Wandsworth
- ☐ Westminster

UK Planning Views: Energy Efficiency & Conservation

Individual Building Owner: Priority for Energy Efficiency

This section asks about the desire or priority for energy efficiency improvements on the retrofit project(s) you have been involved in.

***21. When thinking of the retrofit project(s) subject to conservation that you have been involved in, was improving the energy efficiency of the building(s) a stated objective of the project brief (this would include having a minimum BREEAM, EcoHomes or EPC target)?**

- ◯ Yes in all or almost all projects.
- ◯ Yes in most projects.
- ◯ Yes in about half of the projects.
- ◯ Yes but in only a few projects.
- ◯ No, this has never been a stated objective for any project(s) I have been involved in.

***22. When thinking of the retrofit project(s) subject to conservation that you have been involved in, was improving the performance of the following thermal envelope components of the building listed below a stated objective of the brief? Improving thermal performance meaning improvements or upgrades to insulate better, reduce draughts, or improve air tightness.**

	No, this was not a stated objective.	Yes but in only a few projects.	Yes in about half of the projects.	Yes in most projects.	Yes in all or almost all projects.
Doors	◯	◯	◯	◯	◯
Windows	◯	◯	◯	◯	◯
Walls	◯	◯	◯	◯	◯
Roofs	◯	◯	◯	◯	◯
Ground	◯	◯	◯	◯	◯

UK Planning Views: Energy Efficiency & Conservation

Understanding the Priority for Energy Efficiency in Practice

This section asks about the desire or priority for energy efficiency both in your practice, and on the projects you have been involved in.

***23. When thinking about the organisation you represent (or yourself if sole owner or proprietor) would you say that it is a priority to improve energy efficiency on the project(s) you are involved in?**

- ◯ Yes it is a stated objective of my company to create more energy efficient buildings and environments.
- ◯ Although it is not a stated objective, there is a strong commitment to improving energy efficiency in my company and it is generally supported by the directors/owners.
- ◯ Some individuals in my organisation are concerned with and prioritise energy efficiency on our projects but it is not generally supported or taken up by my organisation as a whole.
- ◯ No, my organisation is generally not concerned with energy efficiency.

***24. When thinking of the retrofit project(s) subject to conservation that you have been involved in, was improving the energy efficiency of the building a stated objective of the project brief (this would include having a minimum BREEAM, EcoHomes or EPC target)?**

- ◯ Yes in all or almost all projects.
- ◯ Yes in most projects.
- ◯ Yes in about half of the projects.
- ◯ Yes but in only a few projects.
- ◯ No, this has never been a stated objective for any project(s) I have been involved in.

***25. When thinking of the retrofit project(s) subject to conservation that you have been involved in, was improving the performance of the following thermal envelope components of the building listed below a stated objective of the brief? Improving thermal performance meaning improvements or upgrades to insulate better, reduce draughts, or improve air tightness.**

	No, this was not a stated objective.	Yes but in only a few projects.	Yes in about half of the projects.	Yes in most projects.	Yes in all or almost all projects.
Doors	◯	◯	◯	◯	◯
Windows	◯	◯	◯	◯	◯
Walls	◯	◯	◯	◯	◯
Roofs	◯	◯	◯	◯	◯
Ground	◯	◯	◯	◯	◯

UK Planning Views: Energy Efficiency & Conservation

Buildings and Energy

This section will ask you some questions about UK buildings, the energy used in them, and the focus being given to them. The intent is to measure some of the knowledge of these issues within industry and amongst relevant home and building owners. You are not expected to know the exact answer. Please do not look up the answers. If you are not sure, simply select your best possible guess or your gut feeling.

***26. What is your opinion on the extent of focus (meaning in the media, by government, by researchers, etc.) on energy efficient retrofit of conservation affected properties? Do you think:**

- ◯ There is too much focus on the energy efficiency of conservation affected properties.
- ◯ The amount of focus on the energy efficient retrofit of conservation affected properties is about right.
- ◯ There is not enough focus on the energy efficiency retrofit of conservation affected properties.
- ◯ No opinion/unsure.

***27. When thinking of all of the existing buildings that are currently built and standing in Great Britain, around what percentage do you think have solid walls?**

- ◯ Less than 10%
- ◯ 10-20%
- ◯ 20-30%
- ◯ 30-40%
- ◯ 40-50%
- ◯ 50-60%
- ◯ 60% or more

***28. When thinking of all of the greenhouse gas emissions created by the energy used in the UK, approximately what percentage of UK emissions do you think is attributed to the building sector (excluding industrial processes)?**

- ◯ Less than 20%
- ◯ 20-30%
- ◯ 30-40%
- ◯ 40-50%
- ◯ 50-60%
- ◯ 60-70%
- ◯ More than 70%

UK Planning Views: Energy Efficiency & Conservation

***29. From the list below, which building activity do you think has the biggest impact on greenhouse gas emissions in residential properties?**

- ◯ Heating/Cooling
- ◯ Lighting
- ◯ Cooking
- ◯ Operating electronics and appliances

***30. From the list below, which building activity do you think has the biggest impact on greenhouse gas emissions in commercial/office properties?**

- ◯ Heating/Cooling
- ◯ Lighting
- ◯ Cooking
- ◯ Operating electronics and appliances

UK Planning Views: Energy Efficiency & Conservation

Exposure to, Use, and Opinion of Planning

This section is interested in your personal experience with and knowledge of planning terms and documents with a focus on heritage and conservation. It also asks about your opinion on the national priority for planning.

***31. For each category, please indicate how confident you are as to the definition of, and the rules and legislation regarding the retrofit of:**

	Not confident, unsure of definition and rules	Somewhat confident, pretty sure of definition and rules	Very confident, know the definition and rules
Listed buildings	○	○	○
Conservation Areas	○	○	○
Traditionally Constructed Buildings	○	○	○

***32. Have you ever personally read and/or needed to use any of the following? (please tick all that apply)**

	Neither Read nor Used	Have Fully Read	Have Partially Read	Have Used
The National Planning Policy Statements (PPS)	☐	☐	☐	☐
The National Planning Policy Framework (NPPF)	☐	☐	☐	☐
The Building Regulations Part L1b or L2b	☐	☐	☐	☐
The London Plan	☐	☐	☐	☐
A Council's UDP, LDF, or Core Strategy	☐	☐	☐	☐
A Council's Supplementary Planning Guidance or Document	☐	☐	☐	☐
An English Heritage Policy Guidance Document	☐	☐	☐	☐

UK Planning Views: Energy Efficiency & Conservation

***33. What do you think is the current main priority specifically for UK Planning?**

- ◯ Sustainable development
- ◯ Economic growth
- ◯ Addressing climate change
- ◯ Social cohesion
- ◯ Maintaining cultural heritage
- ◯ Ensuring Health, Safety, and Welfare
- ◯ Other (please specify)

***34. What do you think should be the main priority specifically for UK Planning?**

- ◯ Sustainable development
- ◯ Economic growth
- ◯ Addressing climate change
- ◯ Social cohesion
- ◯ Maintaining cultural heritage
- ◯ Ensuring Health, Safety, and Welfare
- ◯ Other (please specify)

UK Planning Views: Energy Efficiency & Conservation

Perception and Experience of UK Planning

This section asks for your opinion on three main elements of Planning that affect retrofit projects that are subject to conservation: planning policy and documents; the planning application process; and planning officers. For each element, a series of statements are given. Please indicate your level of agreement with each statement.

If you have worked on different projects and have had varied experiences, please select the answer that you think reflects the majority of your experiences. You can use the text box below each question to provide any additional information or observations if necessary.

***35. Please indicate your level of agreement with the following statements about Planning Policies specifically thinking about the retrofit projects you have been engaged with that have been subject to conservation.**

	strongly disagree			neither agree nor disagree/ unsure			strongly agree
I find Planning policy documents to be clear, comprehensive, and easy to apply and understand.	○	○	○	○	○	○	○
National Planning guidance (PPS's or the NPPF) is relevant and helpful for developing and planning these projects.	○	○	○	○	○	○	○
Planning policies generally agree and there are no conflicts between them.	○	○	○	○	○	○	○
It is easy to determine which policies will apply to my project.	○	○	○	○	○	○	○
There is too much legislation and policy regulating these projects.	○	○	○	○	○	○	○
Local Council policies are the most important policies when developing and planning these projects.	○	○	○	○	○	○	○

36. Please use the space below to make any additional comments regarding Planning Policy. (Optional)

UK Planning Views: Energy Efficiency & Conservation

***37. Please indicate your level of agreement with the following statements about the Planning Application Process specifically thinking about the retrofit projects you have been engaged with that have been subject to conservation.**

	strongly disagree			neither agree nor disagree/ unsure			strongly agree
The planning application process is easy to understand and engage with.	○	○	○	○	○	○	○
Planning application decisions are consistent and reliable.	○	○	○	○	○	○	○
Councils offer helpful and dependable planning application advice.	○	○	○	○	○	○	○
Planning application decisions are firmly based on written policy and guidance and have little to do with Officer or Councillor opinion.	○	○	○	○	○	○	○
Planning application decisions and advice are consistent between Councils.	○	○	○	○	○	○	○
The Planning application process assists in delivering successful projects.	○	○	○	○	○	○	○
I agree with most initial planning application decisions.	○	○	○	○	○	○	○
If you have the time and money to pursue it, you can usually get a decision changed through the appeals process.	○	○	○	○	○	○	○

38. Please use the space below to make any additional comments regarding the Planning Application process. (Optional)

UK Planning Views: Energy Efficiency & Conservation

***39. Please indicate your level of agreement with the following statements about Planning Officers specifically thinking about the retrofit projects you have been engaged with that have been subject to conservation.**

	strongly disagree			neither agree nor disagree/ unsure			strongly agree
Planning officers have enough time and resource to give to their projects.	○	○	○	○	○	○	○
Planning officers help projects to be delivered successfully.	○	○	○	○	○	○	○
Most of my experiences with planning officers have been positive.	○	○	○	○	○	○	○
Planning decisions and advice are consistent between different planning officers.	○	○	○	○	○	○	○
Planning officers offer helpful suggestions for alternative solutions to planning issues.	○	○	○	○	○	○	○
Planning officers are generally up to date with available technological solutions.	○	○	○	○	○	○	○
Planning officers understand the policies they are enforcing.	○	○	○	○	○	○	○

40. Please use the space below to make any additional comments regarding Planning Officers. (Optional)

UK Planning Views: Energy Efficiency & Conservation

Best Practice Planning and Blue Sky Thinking

This section asks you to identify what current documents you think are written and working well to help deliver energy efficient retrofits that maintain cultural heritage and what document or information (if any) you would you like to see, that would further help this objective.

41. When thinking about improving the energy efficiency of existing buildings while maintaining cultural heritage today, what do you think are the most useful or significant pieces of legislation or guidance that are helping to deliver this?
(you can list up to 3 documents or leave blank).

1.
2.
3.

42. Do you have a suggestion for any new policy or guidance document that would help to improve the energy efficiency of existing buildings while maintaining cultural heritage? Please also indicate if policy, at what level of government this should be developed, or if guidance, what group or organisation should publish it. (You may leave this question blank if you do not have a suggestion.)

UK Planning Views: Energy Efficiency & Conservation

Specific Experience with UK Planning

This page gives you an opportunity to briefly share a specific experience you have had with Planning in relation to a conservation affected retrofit project. There will also be an opportunity at the end of this survey to indicate if you would like to be contacted to give additional information, or information on additional projects. All identifying information will be kept strictly confidential.

43. Please use the space provided to share a brief example of a positive experience you have had with UK Planning and a conservation affected retrofit project.
(You may leave this question blank.)

44. Please use the space provided to share a brief example of a negative experience you have had with UK Planning and a conservation affected retrofit project.
(You may leave this question blank.)

UK Planning Views: Energy Efficiency & Conservation

Demographics and Feedback

***45. Which category below includes your age?**

- ◯ 29 or younger
- ◯ 30-39
- ◯ 40-49
- ◯ 50-59
- ◯ 60-69
- ◯ 70 or older
- ◯ prefer not to answer

***46. What is your gender?**

- ◯ Male
- ◯ Female
- ◯ prefer not to answer

47. Would you be interested in being contacted to share a more detailed story about a retrofit project subject to conservation that you have worked on and your experience with planning?
All information will be strictly confidential.

- ◯ Yes
- ◯ No

48. Would you like to receive information about the results of this survey?

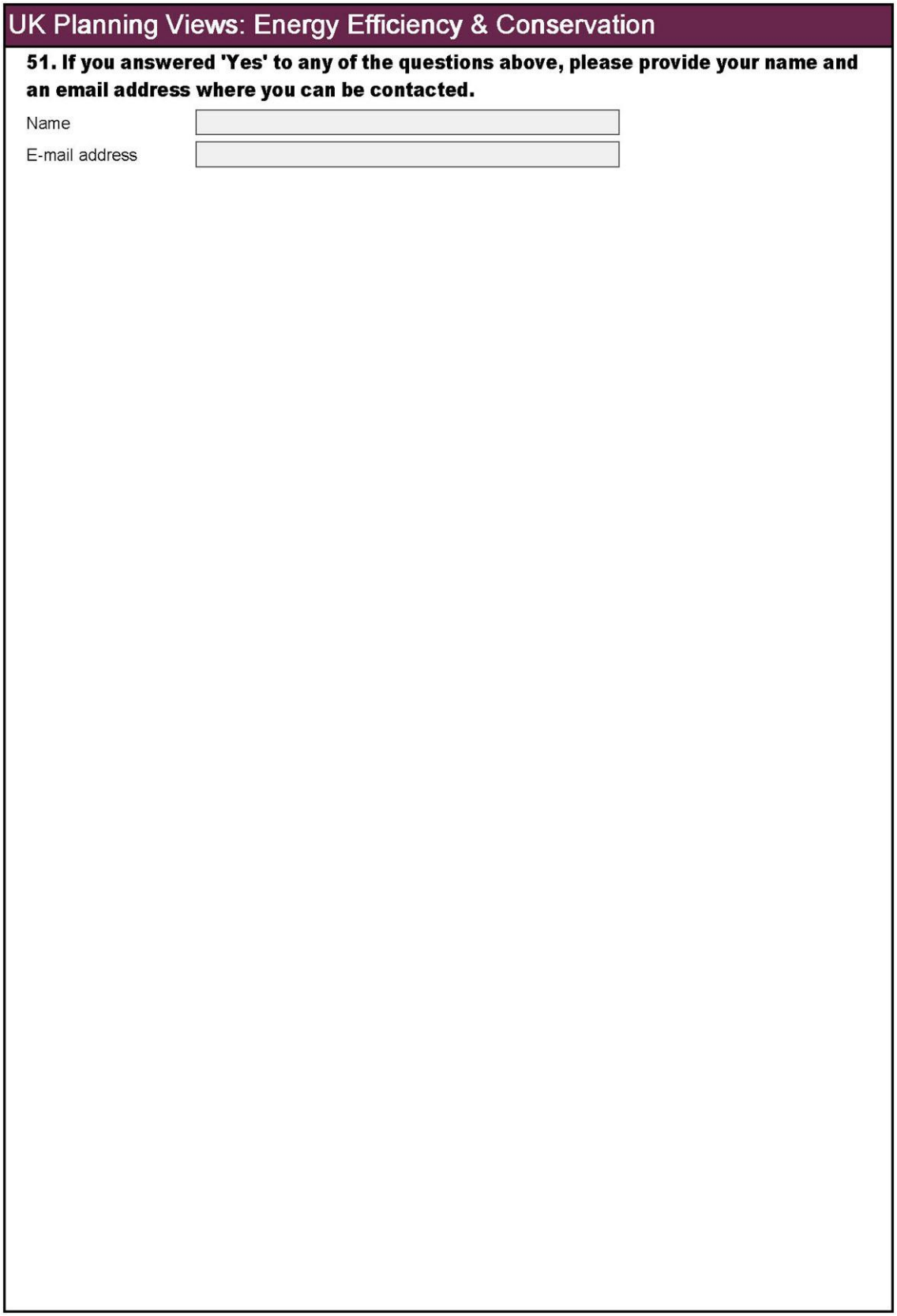
- ◯ Yes
- ◯ No

49. Would you be interested in being invited to attend and participate in a free workshop to be held in London in early 2013 that will discuss the results and outcomes of this survey as well as the other research being done as part of the PhD research on this topic?

- ◯ Yes
- ◯ No

50. Thank you for taking this survey! As a thank you, would you like to be entered in a draw to win your choice of one of two available prizes, either a bottle of champagne or an amazon gift voucher (£50 value each)?

- ◯ Yes
- ◯ No



UK Planning Views: Energy Efficiency & Conservation

51. If you answered 'Yes' to any of the questions above, please provide your name and an email address where you can be contacted.

Name

E-mail address

UK Planning Views: Energy Efficiency & Conservation

Thank you!

Thank you for taking the time to fill in this survey and share your views.

If you enjoyed taking this survey, and know someone else who would be interested in sharing their views on this topic, please feel free to circulate the survey link to them. There is no limit on the number of responses per project or per office/company. The more responses, the more robust the research!

If you have any questions or comments about this work, you may contact the principal researcher:

Kayla Friedman
ksf26@cam.ac.uk

Further information on the Cambridge Centre for Sustainable Development, and the Energy Efficiency in the Built Environment (EEBE) Research Programme through which this PhD was enabled can be found here:

http://www-csd.eng.cam.ac.uk/themes0/energy-demand/energy

Thank you again for your time and contribution!

Please click 'Done' to complete the survey.

Appendix B : APPLICANT INTERVIEW QUESTIONS

The interview questions were split after the initial questions to allow for the applicant to share either a positive or negative experience.

1. Overall, the story you are about to share with me, would you say the experience was positive or negative?
2. Where was the project?
3. How long ago was this project?

Negative experience questions:

4. Before we begin, if you had to sum up the key issues of your story, what would they be?
5. Briefly, what would you say were the main contributing factors to your experience specifically in regards to planning and retrofit?
6. Please tell me the story of your project.
7. How would you say this experience makes you feel about engaging in a future retrofit projects that would be under conservation opinion?
8. Do you feel your experience is unusual or typical?
9. Looking back, is there anything that you think you personally could have done differently to change the outcome?
10. Looking back, is there anything that you think others could have done differently to change the outcome?
11. What do you think should change within the UK policy environment to ensure what happened to you doesn't happen again?
12. Finally, what would you say has been the impact of this experience on you, and the other people involved in this project?

Positive experience questions:

4. Before we begin, If you had to sum up the key points of your story, what would they be?
5. Briefly, what would you say were the main contributing factors to your experience specifically in regards to planning and retrofit?
6. Please tell me the story of your project.
7. How would you say this experience makes you feel about engaging in a future retrofit projects that would be under conservation opinion?
8. Do you feel your experience is unusual or typical?
9. Looking back, what would you highlight that you did personally to help arrive at this outcome?

10. Looking back, what would you highlight that others involved in the project did to help arrive at this outcome?
11. Was there anything specific about the planning system or process that you would say enabled your project to have this outcome?
12. What would you say has been the impact of this experience on you, and the other people involved in the project team?

Appendix C : OFFICER INTERVIEW QUESTIONS

Background Information

1. Position
2. Years at current position
3. Total years in industry
4. Training/background

General Planning information

5. Do you know how many planning officers there are in your Borough and if so how many?
6. How many officers make up the conservation team?
7. How many planning applications are there per year approximately?
8. How many get referred to conservation per year?
9. What criteria does your Borough use for referral to conservation?

Energy Efficiency in the Council and City

10. Is carbon emissions/energy efficiency a priority for your Council? Why or why not?
11. What do you think about the contribution of buildings to your total Borough carbon emissions? (would you say the built environment is a large, moderate, or minimal contributor to Borough emissions?)
12. What aspects or properties of buildings do you think have the biggest impact on carbon emissions and energy use in your Borough?
13. What is your Borough's main priority when it comes to reducing carbon emissions in buildings?
14. When thinking about energy efficient retrofit decision making, policy, enforcement, etc; how do you think your Borough compares to other London Boroughs?
15. What is your awareness of these issues in other Boroughs?
16. How do you think your Borough is performing in terms of approving energy efficient retrofit of conservation properties?
    a. Very well- enough properties are being improved
    b. Reasonably well- some properties are being improved and some are not
    c. Not that well- not enough properties are being improved

Conservation and Energy Efficiency

17. What is your opinion on the extent of focus on energy efficient retrofit of conservation properties- do you think there is too much focus? About the right amount of focus? Not enough focus?
18. Is there one or more good examples of an energy efficient retrofit of a conservation property that you know of in your Borough?
19. Is there an example of a building retrofit where you think more could have been done to improve energy efficiency? If so, what?
20. The Department for Energy and Climate Change is looking at solid wall insulation and improvement of the thermal envelope of existing buildings as a measure for the nation to meet its carbon emission reduction target. What are your biggest concerns when considering:
    a. Window improvements (for listed buildings, buildings in conservation areas, and buildings that are traditionally built?)
    b. Solid wall insulation (for listed buildings, buildings in conservation areas, and buildings that are traditionally built?)
    c. Roof insulation (for listed buildings, buildings in conservation areas, and buildings that are traditionally built?)
    d. Ground insulation (for listed buildings, buildings in conservation areas, and buildings that are traditionally built?)

Available Guidance and Legislation

21. What are the most significant policies or legislation that inform your decisions?
22. What sources of guidance do you use to help make decisions about allowing the use of energy efficient retrofit in historic properties? (including organisations? particular documents? conferences, forums, professional work groups/cross Borough networks?)
23. Do you think there is enough current legislation in order to facilitate good decisions?
    a. Will the upcoming change to the planning system change your opinion?
24. Do you think you have enough guidance available to you in order to make good decisions?
25. Ideally what guidance or legislation would you like to have that you think would help you to make better/easier/quicker/etc. decisions?

Is there anything else that you would like to say on this topic that has not been covered by the interview questions or, having thought about one of your previous answers you would like to say more about?

Appendix D : SCHEDULE & DESIGNATIONS FOR OFFICER INTERVIEWS

Council Designation	**Date of Interview**	**Designation of Interviewees**
Council-1	September 6th, 2011	Officer-1
Council-2	September 6th, 2011	Officer-2
Council-3	September 6th 2011	Officer-3
Council-4	September 8th, 2011	Officer-4
Council-5	September 22nd, 2011	Officer-5
Council-6	September 22nd, 2011	Officer-6
Council-7	February 16th, 2012	Officer-7 & Officer-8
(March 27th, 2012: Change to the National Planning System)		
Council-8	May 1st, 2012	Officer-9
Council-9	May 28th, 2012	Officer-10
Council-10	June 18th, 2012	Officer-11 & Officer-12
Council-11	June 29th, 2012	Officer-13
Council-12	October 15th, 2012	Officer-14 & Officer-15

Appendix E : ASSESSOR SURVEY

UK Planner Views: Energy Efficiency & Conservation

UK Planner Views: Energy Efficiency & Conservation

Welcome, and thank you for coming to this survey!

This survey is for you, if you are a Planning Officer employed by a local authority in England who has dealt with applications for energy efficient retrofit work to buildings subject to conservation opinion.

This survey compliments a similar survey being done of building owners and building industry practitioners who make applications. If that better describes your role in retrofit projects, please go to that survey by copying and pasting the following link into your browser: https://www.surveymonkey.com/s/UKPEEC

Specifically this survey is interested in the experiences and attitudes of Officers towards National and Local Planning, Energy Efficiency Improvements, and Conservation Policy.

This research is being used as part of a PhD being undertaken at the University of Cambridge, Department of Engineering, Centre for Sustainable Development that is examining the apparent tension in UK Planning between energy efficiency and conservation in retrofit projects. This work is being funded by the UK Engineering and Physical Sciences Research Council (EPSRC) and international private property group Grosvenor.

This survey is comprised of six sections and should take around 15-20 minutes to complete. All answers and identifying information are completely confidential.

As a thank you for your time, at the end of the survey you will be given the opportunity to enter in a prize draw for both surveys for one of either a bottle of champagne or an Amazon gift voucher (£50 value each).

This survey will be open and collecting responses until the end of January 2013.

UK Planner Views: Energy Efficiency & Conservation

Survey Definitions

This survey specifically asks about your experience with retrofit projects on properties subject to conservation planning opinion.

For the purpose of this survey, "conservation affected properties" or properties "subject to conservation" means those buildings or properties that require consent, or are referred to conservation, or are subject to conservation opinion during the planning application process.

This includes all listed buildings, buildings in conservation areas, buildings adjacent to conservation areas and therefore affected by a conservation area; locally listed buildings, and traditionally constructed buildings.

Traditionally constructed buildings are defined by English Heritage as, "Buildings with permeable fabric that both absorbs and readily allows the evaporation of moisture." For example, most properties built before 1919 and most solid wall properties. These buildings may not be listed, or within or affected by a conservation area, but may still be subject to conservation opinion.

Survey questions marked with '' require an answer.

***1. To begin the survey:**

◯ Please tick this box to show you have read and understood the definitions

UK Planner Views: Energy Efficiency & Conservation

Background Information

This page asks some basic questions about you, your role and your local authority. Please note that all identifying answers will be kept strictly confidential.

2. What is your local authority?

3. Approximately how many Planning Officers are there in your local authority?

4. How many officers make up the 'Conservation Team'?

***5. What best describes your role as a Planning Officer? (check all that apply)**

- ☐ Environment Officer
- ☐ Conservation Officer
- ☐ Urban Design Officer
- ☐ Policy Officer
- ☐ Development Control Officer
- ☐ Building Control Officer
- ☐ Other (please specify)

6. Approximately how many years have you been at your current position?

***7. Approximately how many years in total have you been involved in the building industry?**

UK Planner Views: Energy Efficiency & Conservation

Energy Efficiency in your Local Authority

This section will ask you some questions about energy use in your local authority. You are not expected to know the exact answer. Please do not look up the answers. If you are not sure, simply select your best possible guess or your gut feeling.

***8. Would you say that carbon emissions/energy efficiency is a priority in your local authority (for example, is it high on the agenda, are there programs to address it, is it a 'hot topic', etc.)?**

- ◯ Yes
- ◯ No

9. If yes, would you briefly explain why or provide an example?

10. What would you say is your local authority's biggest priority when it comes to reducing carbon emissions in existing buildings? Or, please indicate if there is none, or if you are unsure.

11. How do you think your local authority is doing when it comes to approving energy efficient retrofits of conservation affected properties? (select the best possible choice)

- ◯ Very well- we get a good amount of applications and many of those are approved.
- ◯ Reasonably well- we get a good amount of applications and some of those are approved and some are not.
- ◯ Reasonably well- we get some applications, and some of those are approved.
- ◯ Not that well- we get a good amount of applications but not many are approved.
- ◯ Not that well- we get some applications, but many are not approved.
- ◯ Not that well- we don't get many applications for energy efficient improvements.
- ◯ Other (please specify)

UK Planner Views: Energy Efficiency & Conservation

12. When thinking about energy efficiency measures, policies, or advancement within or enacted by your local authority, how do you think that compares to other local authorities around the country?

- ◯ We are leading in terms of what can be done by a local authority and setting an example for others.
- ◯ We are doing alright compared to other local authorities, we are not leading, but we are not falling behind.
- ◯ We are behind other local authorities in this area.
- ◯ Other (please specify)

13. How much would you say you know about this issue in terms of what is going on in other local authorities?

- ◯ I am well informed on this issue about programs, initiatives, and decision making in a number of different local authorities.
- ◯ I am well informed on this issue about programs, intiatives, and decision making in one or a couple of other local authorities.
- ◯ I am moderately informed about how other local authorities are addressing this issue for a few different local authorities.
- ◯ I am moderately informed about how one or a couple of other local authorities are addressing this issue.
- ◯ I do not know much about how any other local authority is addressing this issue.

Other (please specify)

UK Planner Views: Energy Efficiency & Conservation

Building Envelope Improvements

The Department for Energy and Climate Change is looking at solid wall insulation and improvements to the thermal envelope of existing buildings as a measure for the nation to meet its carbon emission reduction target. This section asks about your opinions and concerns regarding the apparent conflict between some of these improvements and maintaining cultural heritage.

14. For the following window improvements in listed buildings, please select your view for each option.

	Don't know/ Not sure	Never considered appropriate	Rarely considered appropriate	Might be considered appropriate	Often considered appropriate	Always considered appropriate
Draught proofing and improved air tightness measures to original window.	◯	◯	◯	◯	◯	◯
Secondary double glazing	◯	◯	◯	◯	◯	◯
Slimline glazing glass replacement (keeping original wood windows)	◯	◯	◯	◯	◯	◯
Encapsulated windows (for metal and crittall windows)	◯	◯	◯	◯	◯	◯
New wood replacement windows with slimline double glazing to match original proportions.	◯	◯	◯	◯	◯	◯

UK Planner Views: Energy Efficiency & Conservation

15. For the following window improvements to buildings in conservation areas, please select your view for each option.

	Don't know/ Not sure	Never considered appropriate	Rarely considered appropriate	Might be considered appropriate	Often considered appropriate	Always considered appropriate
Draught proofing and improved air tightness measures to original window.	◯	◯	◯	◯	◯	◯
Secondary double glazing	◯	◯	◯	◯	◯	◯
Slimline glazing glass replacement (keeping original wood windows)	◯	◯	◯	◯	◯	◯
Encapsulated windows (for metal and crittall windows)	◯	◯	◯	◯	◯	◯
New wood replacement windows with slimline double glazing to match original proportions.	◯	◯	◯	◯	◯	◯

16. Does your opinion about window options change depending on if the window is located on the street (public) frontage or garden (private) frontage of the building?

◯ Yes

◯ No

17. If yes, please explain.

18. For the following wall improvements in listed buildings, please select your view for each option.

	Don't know/ Not sure	Never considered appropriate	Rarely considered appropriate	Might be considered appropriate	Often considered appropriate	Always considered appropriate
Internal wall insulation	◯	◯	◯	◯	◯	◯
External wall insulation	◯	◯	◯	◯	◯	◯

UK Planner Views: Energy Efficiency & Conservation

19. For the following wall improvements to buildings in conservation areas, please select your view for each option.

	Don't know/ Not sure	Never considered appropriate	Rarely considered appropriate	Might be considered appropriate	Often considered appropriate	Always considered appropriate
Internal wall insulation	◯	◯	◯	◯	◯	◯
External wall insulation	◯	◯	◯	◯	◯	◯

20. Does your opinion about wall insulation options change depending on if the wall is located on the street (public) frontage or garden (private) frontage of the building?

◯ Yes

◯ No

21. If yes, please explain.

22. For the following roof insulation improvements in listed buildings, please select your view for each option.

	Don't know/ Not sure	Never considered appropriate	Rarely considered appropriate	Might be considered appropriate	Often considered appropriate	Always considered appropriate
Insulating between the joists under the existing roof.	◯	◯	◯	◯	◯	◯
Insulating above the joists, moving the existing roofing material on top of the new insulation.	◯	◯	◯	◯	◯	◯
Insulating above the joists, replacing the roofing material.	◯	◯	◯	◯	◯	◯

UK Planner Views: Energy Efficiency & Conservation

23. For the following roof insulation improvements to buildings in conservation areas, please select your view for each option.

	Don't Know/ Not sure	Never considered appropriate	Rarely considered appropriate	Might be considered appropriate	Often considered appropriate	Always considered appropriate
Insulating between the joists under the existing roof.	◯	◯	◯	◯	◯	◯
Insulating above the joists, moving the existing roofing material on top of the new insulation.	◯	◯	◯	◯	◯	◯
Insulating above the joists, replacing the roofing material.	◯	◯	◯	◯	◯	◯

24. Does your opinion about roof insulation options change depending on if the roof is visible from the street (public) frontage or garden (private) frontage?

◯ Yes

◯ No

25. If yes, please explain.

26. For the following ground insulation improvements in listed buildings, please select your view for each option.

	Don't Know/ Not sure	Never considered appropriate	Rarely considered appropriate	Might be considered appropriate	Often considered appropriate	Always considered appropriate
Insulating under existing floorboards for buildings with no basement.	◯	◯	◯	◯	◯	◯
Digging out basement levels, preserving and replacing any original flooring.	◯	◯	◯	◯	◯	◯
Digging out basement levels, removing any original flooring.	◯	◯	◯	◯	◯	◯

UK Planner Views: Energy Efficiency & Conservation

27. For the following ground insulation improvements to buildings in conservation areas, please select your view for each option.

	Don't know/ Not sure	Never considered appropriate	Rarely considered appropriate	Might be considered appropriate	Often considered appropriate	Always considered appropriate
Insulating under existing floorboards for buildings with no basement.	◯	◯	◯	◯	◯	◯
Digging out basement levels, preserving and replacing any original flooring.	◯	◯	◯	◯	◯	◯
Digging out basement levels, removing any original flooring.	◯	◯	◯	◯	◯	◯

***28. When it comes to building owners wanting to improve the energy efficiency of their properties that fall under conservation opinion, briefly, in general or specifically, what would you say are your biggest overriding concerns? (If you have no concerns, please write 'none'.)**

UK Planner Views: Energy Efficiency & Conservation

Perception and Experience of UK Planning

This section asks for your opinion on three main elements of Planning that affect retrofit projects that are subject to conservation: planning policy and documents; the planning application process; and planning officers. For each element, a series of statements are given. Please indicate your level of agreement with each statement.

If you have worked on different projects and have had varied experiences, please select the answer that you think reflects the majority of your experiences. You can use the text box below each question to provide any additional information or observations if necessary.

***29. Please indicate your level of agreement with the following statements about Planning Policies specifically thinking about the retrofit projects you have been engaged with that have been subject to conservation.**

	strongly disagree			neither agree nor disagree/ unsure			strongly agree
I find Planning policy documents to be clear, comprehensive, and easy to apply and understand.	◯	◯	◯	◯	◯	◯	◯
National Planning guidance (PPS's or the NPPF) is relevant and helpful for developing and planning these projects.	◯	◯	◯	◯	◯	◯	◯
Planning policies generally agree and there are no conflicts between them.	◯	◯	◯	◯	◯	◯	◯
It is easy to determine which policies will apply to my project.	◯	◯	◯	◯	◯	◯	◯
There is too much legislation and policy regulating these projects.	◯	◯	◯	◯	◯	◯	◯
Local Council policies are the most important policies when developing and planning these projects.	◯	◯	◯	◯	◯	◯	◯

30. Please use the space below to make any additional comments regarding Planning Policy. (Optional)

UK Planner Views: Energy Efficiency & Conservation

***31. Please indicate your level of agreement with the following statements about the Planning Application Process specifically thinking about the retrofit projects you have been engaged with that have been subject to conservation.**

	strongly disagree			neither agree nor disagree/ unsure			strongly agree
The planning application process is easy to understand and engage with.	◯	◯	◯	◯	◯	◯	◯
Planning application decisions are consistent and reliable.	◯	◯	◯	◯	◯	◯	◯
Councils offer helpful and dependable planning application advice.	◯	◯	◯	◯	◯	◯	◯
Planning application decisions are firmly based on written policy and guidance and have little to do with Officer or Councillor opinion.	◯	◯	◯	◯	◯	◯	◯
Planning application decisions and advice are consistent between Councils.	◯	◯	◯	◯	◯	◯	◯
The Planning application process assists in delivering successful projects.	◯	◯	◯	◯	◯	◯	◯
I agree with most initial planning application decisions.	◯	◯	◯	◯	◯	◯	◯
If you have the time and money to pursue it, you can usually get a decision changed through the appeals process.	◯	◯	◯	◯	◯	◯	◯

32. Please use the space below to make any additional comments regarding the Planning Application Process. (Optional)

UK Planner Views: Energy Efficiency & Conservation

***33. Please indicate your level of agreement with the following statements about Planning Officers specifically thinking about the retrofit projects you have been engaged with that have been subject to conservation.**

	strongly disagree			neither agree nor disagree/ unsure			strongly agree
Planning officers have enough time and resource to give to their projects.	◯	◯	◯	◯	◯	◯	◯
Planning officers help projects to be delivered successfully.	◯	◯	◯	◯	◯	◯	◯
Planning decisions and advice are consistent between different planning officers.	◯	◯	◯	◯	◯	◯	◯
Planning officers offer helpful suggestions for alternative solutions to planning issues.	◯	◯	◯	◯	◯	◯	◯
Planning officers are generally up to date with available technological solutions.	◯	◯	◯	◯	◯	◯	◯
Planning officers understand the policies they are enforcing.	◯	◯	◯	◯	◯	◯	◯

34. Please use the space below to make any additional comments regarding Planning Officers. (Optional)

UK Planner Views: Energy Efficiency & Conservation

Guidance and Legislation

This page asks about your opinion and use of available guidance and legislation that regulates decision-making for retrofit of conservation affected properties.

***35. What are the most significant policies or legislation that inform your decision making in this area? (Please provide at least 1 example, you may list up to 5)**

1.
2.
3.
4.
5.

***36. What are the most significant guidance documents that you use to help inform your decision making in this area? (Please provide at least 1 example, you may list up to 5)**

1.
2.
3.
4.
5.

***37. How do you feel about the replacement of the PPSs with the NPPF, specifically in regards to helping to inform your decisions, and in regards to the expected time-frame for application decisions on these sorts of projects?**

◯ The NPPF improves my decision-making, and I expect applications to be decided quicker by comparison.

◯ The NPPF negatively affects my decision making, and I expect applications to take longer by comparison.

◯ There is no change to my decision-making, and applications will take the same amount of time by comparison.

◯ Other (please specify)

UK Planner Views: Energy Efficiency & Conservation

38. Which of the following organisations have you personally used for other sources of information, advice, professional networking, or knowledge sharing in this area? (tick all that apply)

- ☐ English Heritage
- ☐ IHBC
- ☐ BRE
- ☐ SPAB
- ☐ Victorian Society
- ☐ Georgian Group
- ☐ Other(s) (please specify)

39. Blue-sky thinking: Do you have a suggestion for any new policy or guidance document that would help to improve the energy efficiency of existing buildings while maintaining cultural heritage? Please also indicate if policy, at what level of government this should be developed, or if guidance, what group or organisation should publish it.

UK Planner Views: Energy Efficiency & Conservation

Demographics and Feedback

40. Which category below includes your age?

- ◯ 29 or younger
- ◯ 30-39
- ◯ 40-49
- ◯ 50-59
- ◯ 60-69
- ◯ 70 or older

41. What is your gender?

- ◯ Male
- ◯ Female
- ◯ Prefer not to answer

42. Would you like to receive information about the results of this and the owner/practitioner survey?

- ◯ Yes
- ◯ No

43. Would you be interested in being invited to attend and participate in a free workshop to be held in London in early 2013 that will discuss the results and outcomes of this and the owner/practitioner survey as well as the other research being done as part of the PhD research on this topic?

- ◯ Yes
- ◯ No

44. Thank you for taking this survey! As a thank you, would you like to be entered in a prize draw for both surveys to win your choice of one of two available prizes, either a bottle of champagne or an amazon gift voucher (£50 value each)?

- ◯ Yes
- ◯ No

45. If you answered 'Yes' to any of the questions above, please provide your name and an email address where you can be contacted.

Name

E-mail address

UK Planner Views: Energy Efficiency & Conservation

Thank You!

Thank you for taking the time to fill in this survey and share your views.

If you enjoyed taking this survey, and know someone else who would be interested in sharing their views on this topic, please feel free to circulate the survey link to them. There is no limit on the number of responses per project or per local authority.

If you have any questions or comments about this research, you may contact the principal researcher:

Kayla Friedman
ksf26@cam.ac.uk

Further information on the Cambridge Centre for Sustainable Development, and the Energy Efficiency in the Built Environment (EEBE) Research Programme through which this PhD was enabled can be found here:

http://www-csd.eng.cam.ac.uk/themes0/energy-demand/energy

Thank you again for your time and contribution.

Please click 'Done' to complete the survey.

Appendix F : MEMORANDUM OF UNDERSTANDING

UNIVERSITY OF CAMBRIDGE Department of Engineering | Centre for Sustainable Development

GROSVENOR

Interviewee Memorandum of Understanding

Thank you for participating in this research interview conducted by Kayla Friedman, PhD Candidate (supervised by Dr. Alison Cooke) of the Centre for Sustainable Development at the University of Cambridge, Department of Engineering. This interview forms part of a larger study being conducted as part of a Doctorate thesis. Your participation in this survey is entirely voluntary.

1. PURPOSE OF THE STUDY:

The purpose of this study is to understand the reasons for conflicts between energy efficient retrofit and conservation and propose ways to overcome them. In particular, this interview will be used to understand issues facing Conservation Planning Officers of 13 London Boroughs when making decisions about appropriateness of thermal envelope improvements to existing conservation buildings.

2. CONFIDENTIALITY

All information obtained from the survey will remain completely confidential within the Cambridge University Department of Engineering, and used anonymously in the research.

4. POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY

The outcomes of the entire PhD research should identify the key issues that result in energy efficiency and conservation conflicts as well as areas for further research, guidance, or policy interventions that will enable more approved planning applications for thermal envelope improvements to conservation properties.

5. PAYMENT FOR PARTICIPATION

You will not receive any payment or other compensation for participation in this survey. There is also no cost to you for participation.

4. YOUR RIGHTS TO PARTICIPATE, SAY NO, OR WITHDRAW:

Participation in this research interview is completely voluntary. You have the right to say no. You may choose not to answer specific questions or to stop participating at any time.

5. CONTACT INFORMATION FOR QUESTIONS AND CONCERNS:

If you have concerns or questions about this study, please contact the researcher:

Kayla Friedman, Centre for Sustainable Development, Department of Engineering, University of Cambridge. Email: ksf26@cam.ac.uk

UNIVERSITY OF CAMBRIDGE Department of Engineering | Centre for Sustainable Development

GROSVENOR

I consent that I understand the statements described above, and that I grant permission for my anonymous interview responses and demographic data to be analysed and published.

My questions have been answered to my satisfaction, and I agree to participate in this survey. I have been provided a copy of this form.

_____

Printed Name

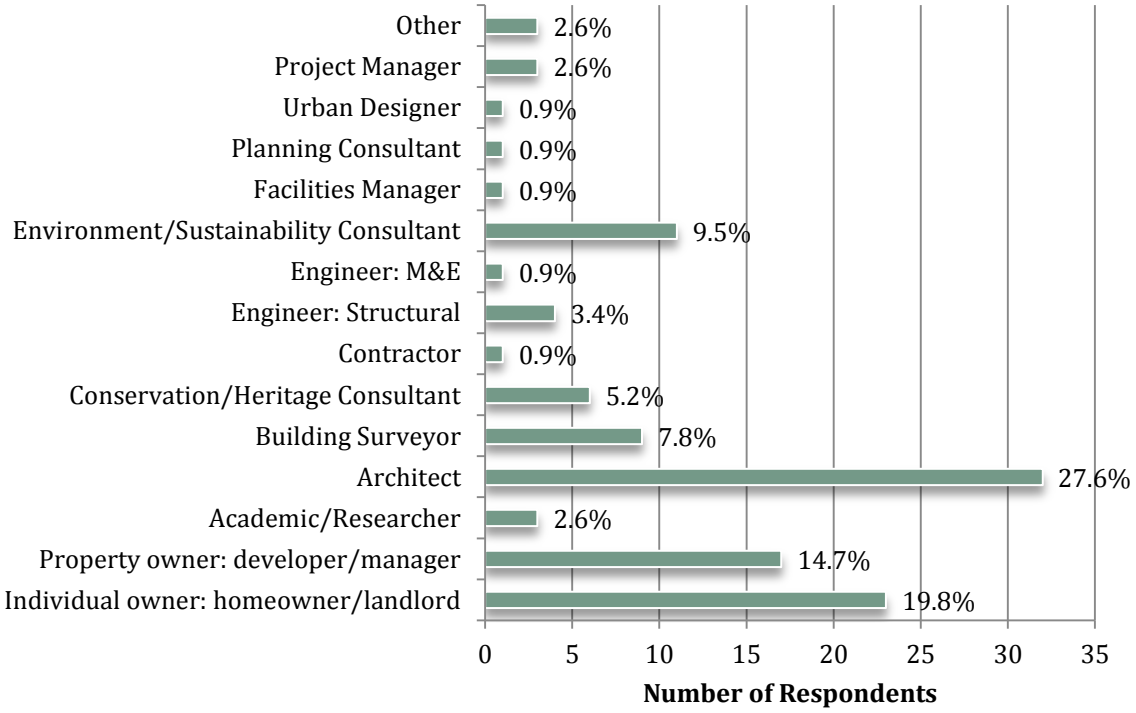
_____ _____

Signature Date

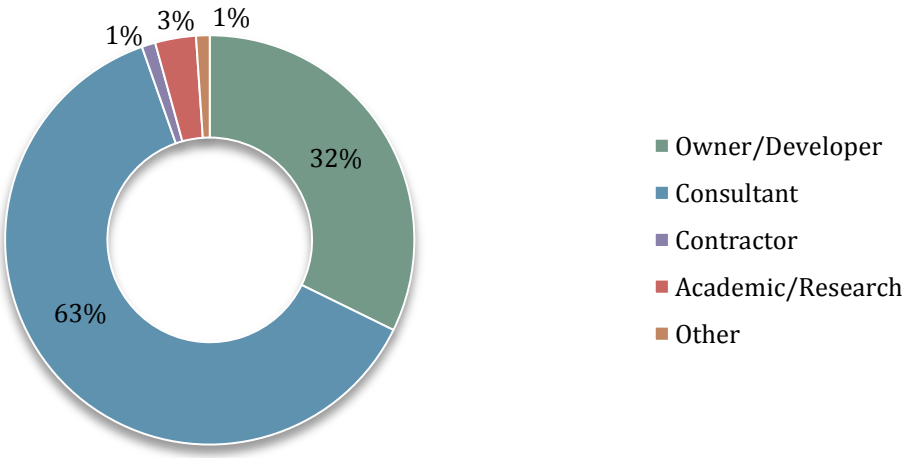
Please Initial here if you agree for the interview to be recorded: _____

Appendix G : RESULTS OF APPLICANT SURVEY

Q2: What is or has been your own primary role on retrofit project(s)? (116 responses)

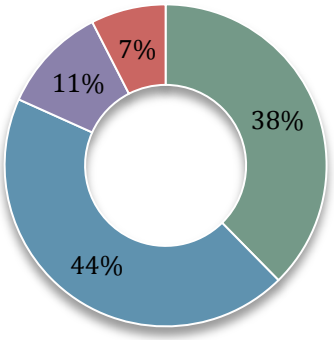


Q3: What is the primary role of your company in respect to retrofit? (93 responses)



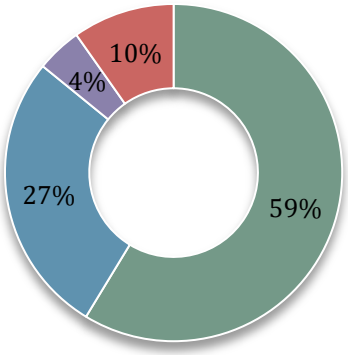
Q4: Describe the most common contractual role of your company when thinking of the retrofit projects you have been involved in. (93 responses)

- I or my company owns the property, sets the brief, and/or makes the final decisions.
- I or my company am usually hired directly by the building or project owner.
- I or my company am half the time hired directly by the building or project owner, and half the time sub-contracted to another consultant hired by the owner.
- I or my company am usually sub-contracted to another consultant hired by the building or project owner.

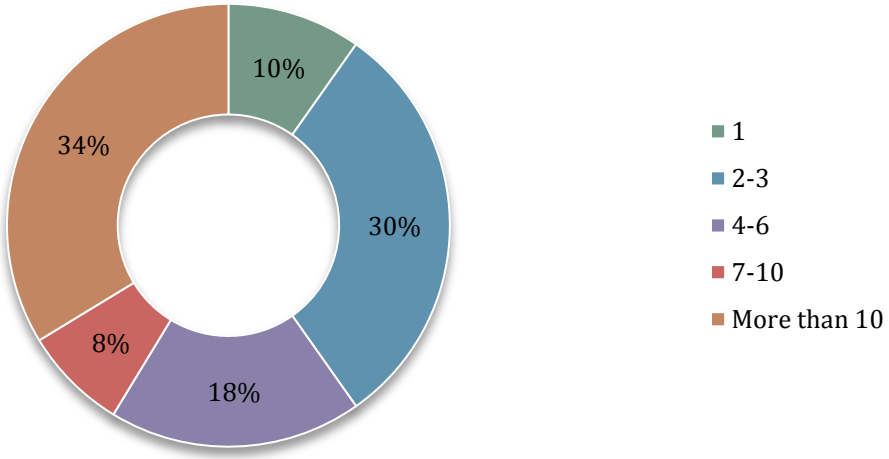


Q5: What best describes your current role? (93 responses)

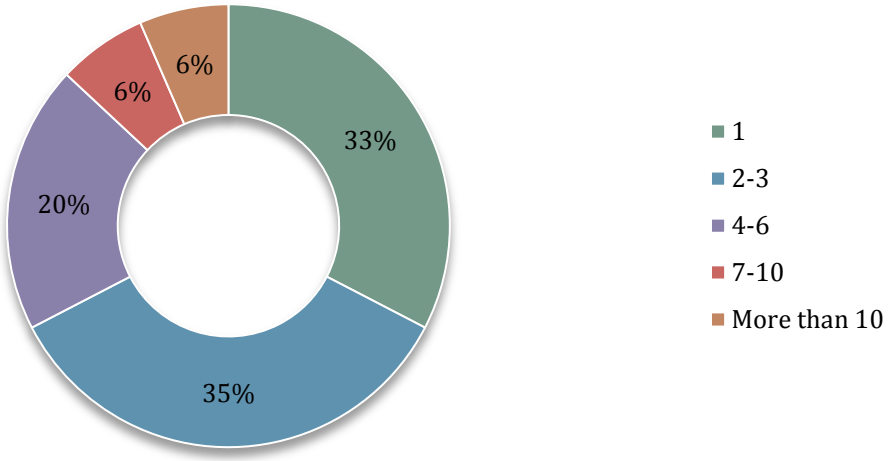
- I am the lead (or sole) representative of my team or company on projects.
- I am a mid-level representative of my company, I work directly under the lead consultant and can sit in for them if required.
- I am an entry-level representative of my company and am currently learning about my industry and profession through experience on projects.
- I am a specialist within my organisation who consults the project lead or team.



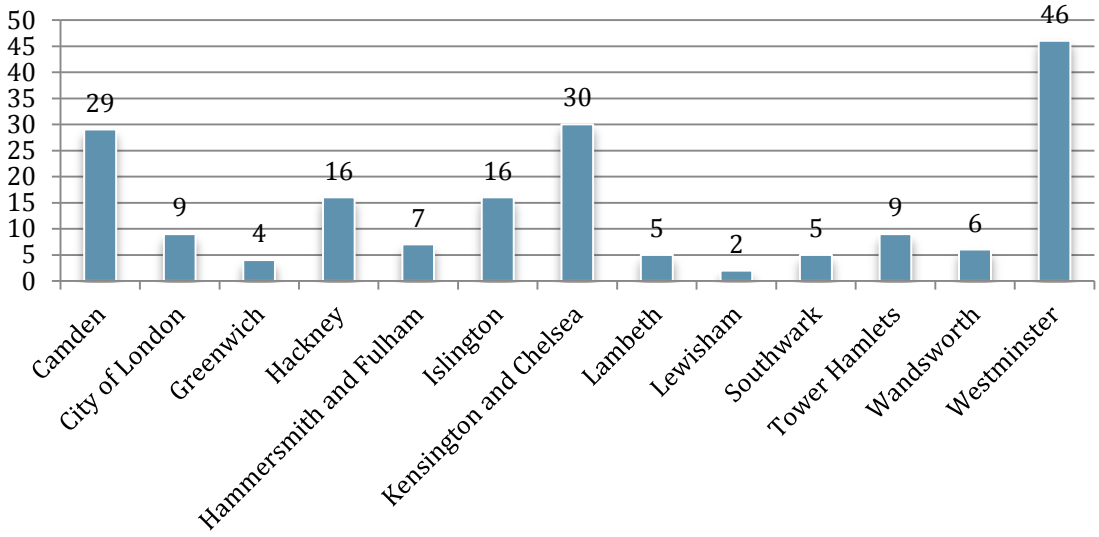
Q6: How many retrofit projects subject to conservation have you been involved in? (93 responses)



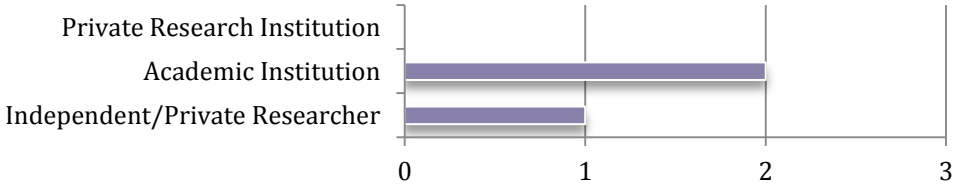
Q7: For the above projects, how many different Councils have you dealt with? (93 responses)



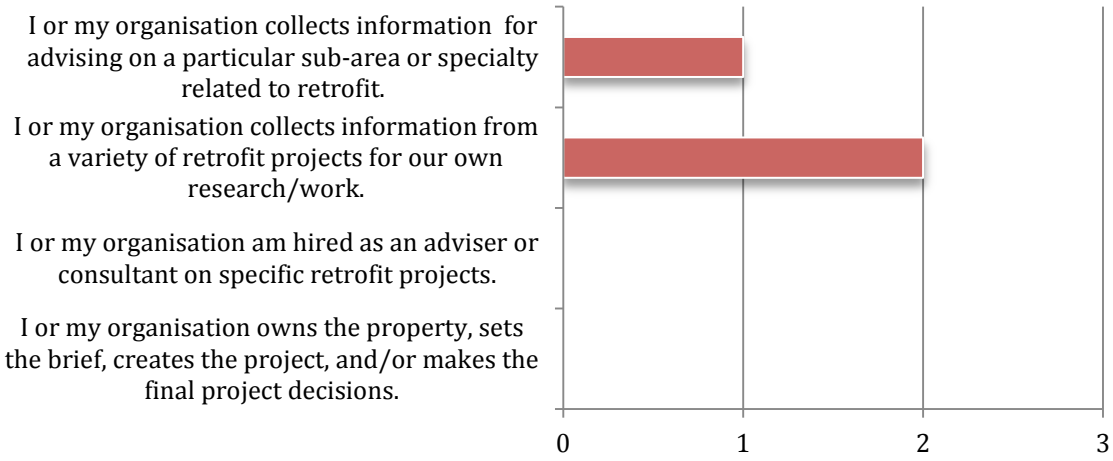
Q8: Have any of the above projects been in any of the following Boroughs? (72 responses)



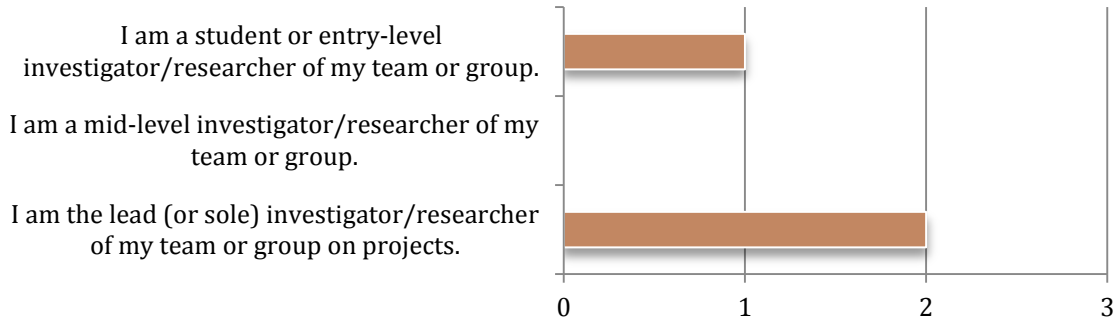
Q9: What is the primary role of your academic/research organisation in respect to retrofit projects? (3 responses)



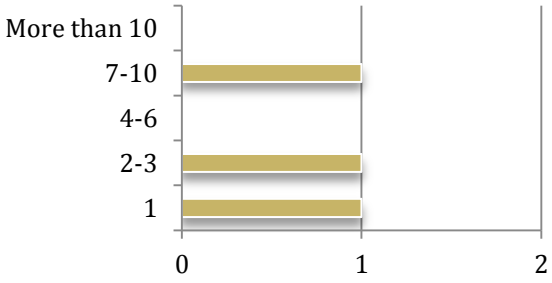
Q10: Describe the most common role of your academic/ research organisation in regars to retrofit projects. (3 responses)



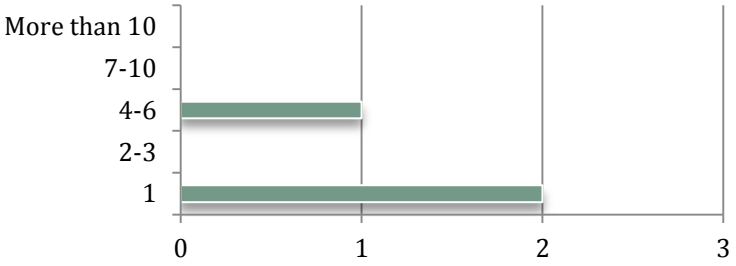
Q11: What statement best describes your role within your current academic/research organisation? (3 responses)



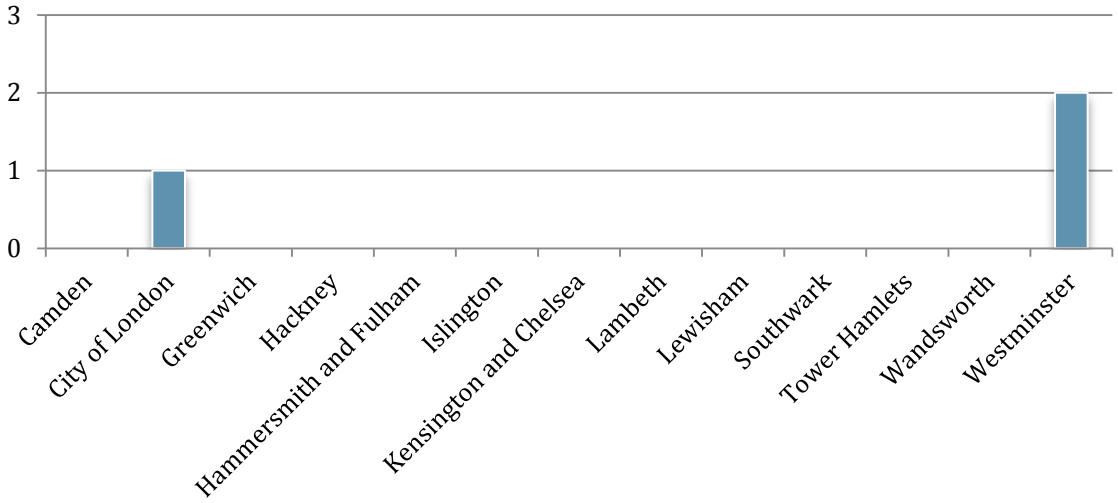
Q12: How many retrofit projects subject to conservation have you been involved in? (3 responses)



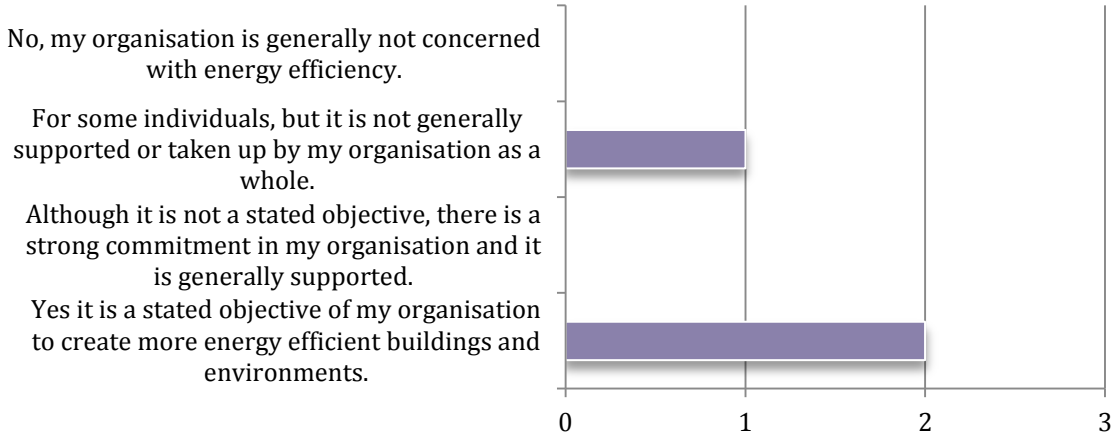
Q13: For the above projects, how many different Councils have you dealt with? (3 responses)



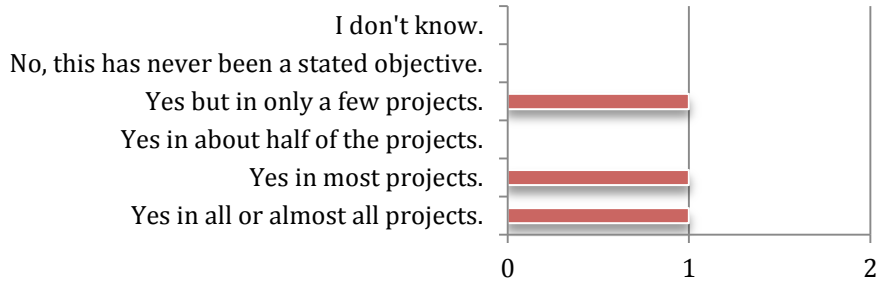
Q8: Have any of the above projects been in any of the following Boroughs? (3 responses)



Q15: Thinking about the academic/research organisation you represent, would you say improving energy efficiency on projects is a priorty? (3 responses)



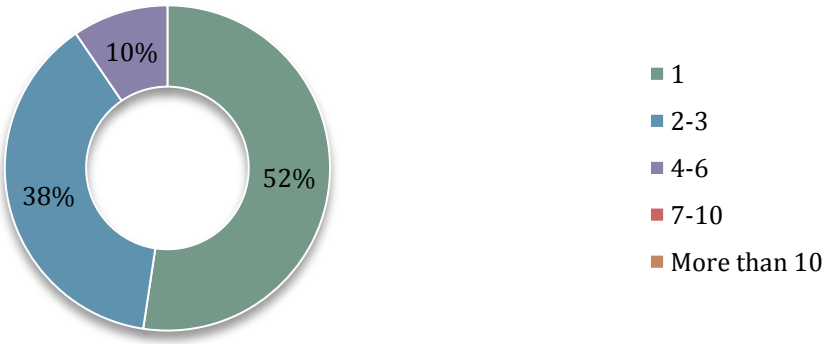
Q16: For the above projects, was improving the energy efficiency a stated objective of the brief? (3 responses)



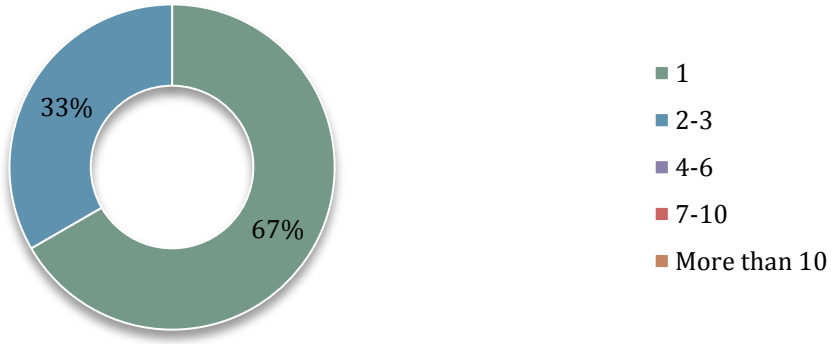
Q17: Was improving the performance of the following thermal envelope components of the building listed below a stated objective of the brief? (3 responses)

	No, this was not a stated objective.	Yes but in only a few projects.	Yes in about half of the projects.	Yes in most projects.	Yes in all or almost all projects.	Don't know or not sure.
Doors	33% 1	33% 1	33% 1	0	0	0
Windows	33% 1	33% 1	0	33% 1	0	0
Walls	33% 1	0	0	0	33% 1	33% 1
Roofs	33% 1	0	0	0	33% 1	33% 1
Ground	67% 2	0	0	0	0	33% 1

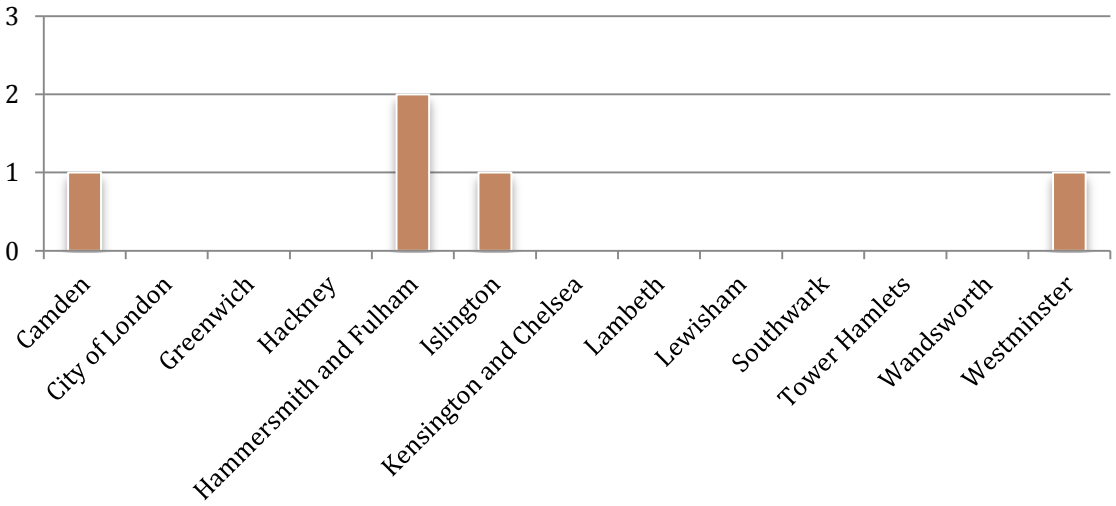
Q18: As a building owner, how many retrofit projects subject to conservation have you been involved in? (21 responses)



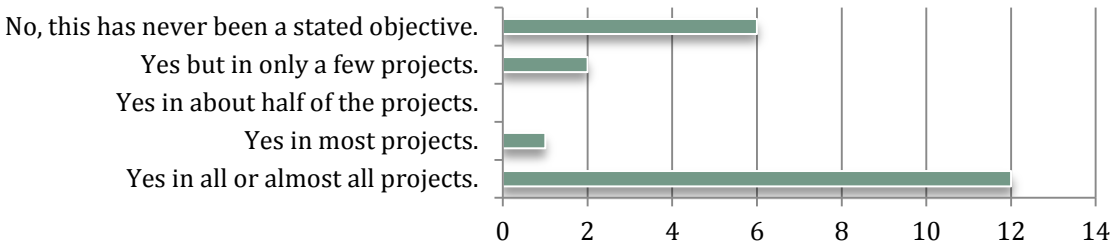
Q19: For the above projects, how many different Councils have you dealt with? (21 responses)



Q20: Have any of the above projects been in any of the following Boroughs? (4 responses)



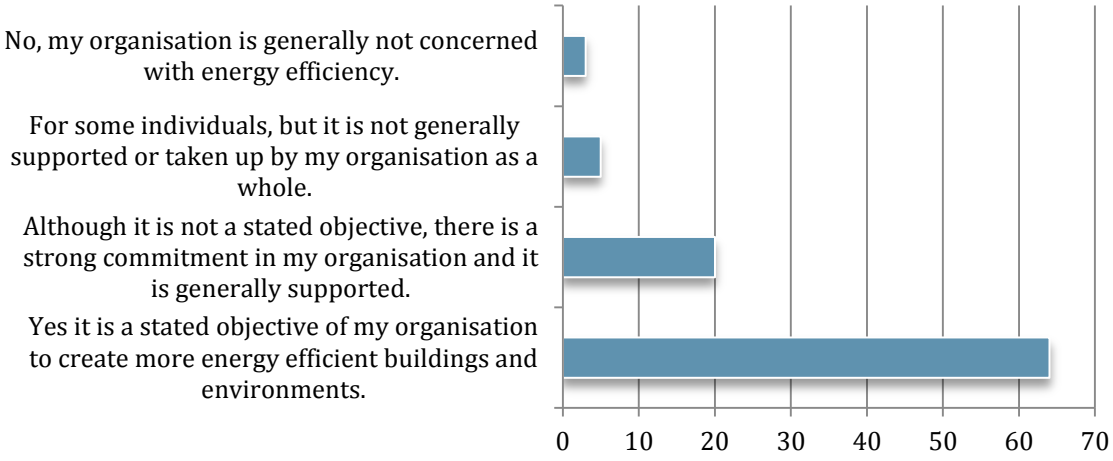
Q21: For the above projects, was improving the energy efficiency a stated objective of the brief? (21 responses)



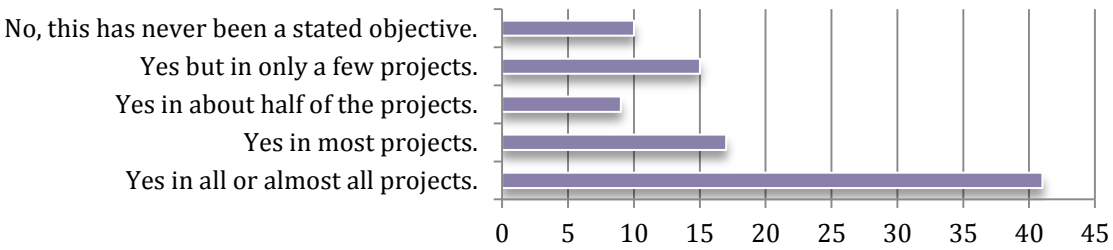
Q22: Was improving the performance of the following thermal envelope components of the building listed below a stated objective of the brief? (21 responses)

	No, this was not a stated objective.	Yes but in only a few projects.	Yes in about half of the projects.	Yes in most projects.	Yes in all or almost all projects.
Doors	48% 10	10% 2	10% 2	0	33% 7
Windows	19% 4	10% 2	10% 2	5% 1	57% 12
Walls	48% 10	5% 1	10% 2	0	38% 8
Roofs	48% 10	10% 2	5% 1	5% 1	33% 7
Ground	71% 15	0	0	0	29% 6

Q23: Thinking about the organisation you represent, would you say improving energy efficiency on projects is a priorty? (92 responses)



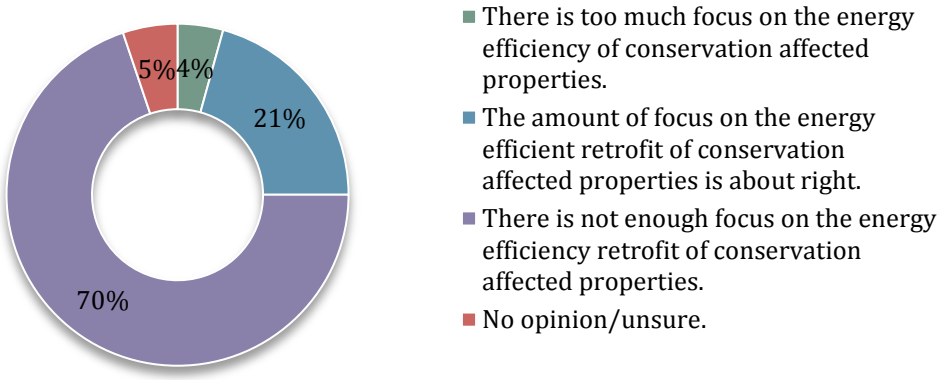
Q24: For the above projects, was improving the energy efficiency a stated objective of the brief? (92 responses)



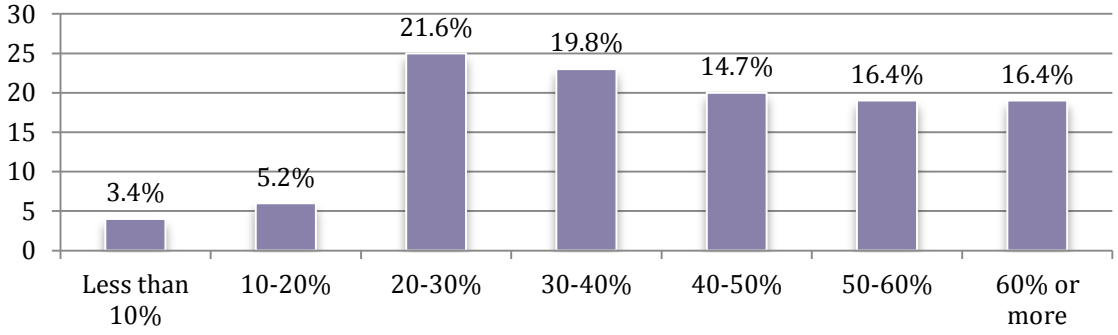
Q25: Was improving the performance of the following thermal envelope components of the building listed below a stated objective of the brief? (92 responses)

	No, this was not a stated objective.	Yes but in only a few projects.	Yes in about half of the projects.	Yes in most projects.	Yes in all or almost all projects.
Doors	30% 28	23% 21	9% 8	16% 15	22% 20
Windows	14% 13	17% 16	12% 11	26% 24	30% 28
Walls	21% 19	25% 23	18% 17	13% 12	23% 21
Roofs	14% 13	17% 16	18% 17	21% 19	29% 27
Ground	34% 31	29% 27	9% 8	12% 11	16% 15

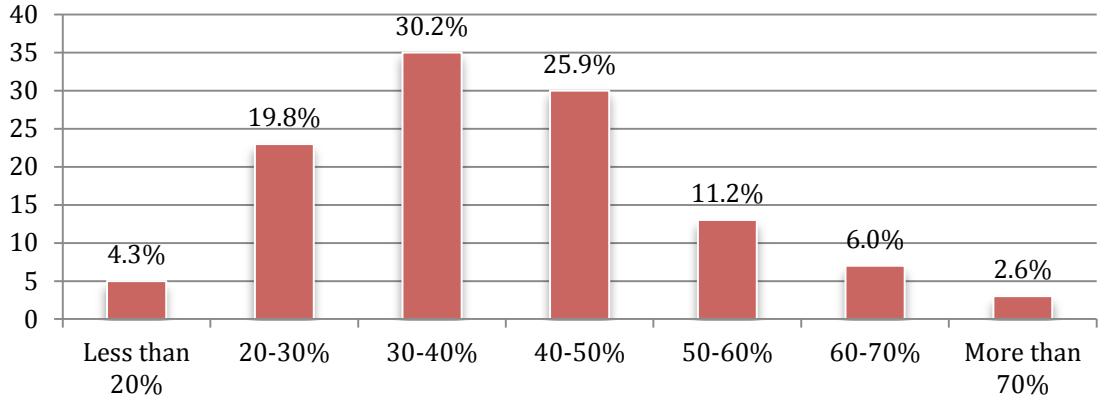
Q26: What is your opinion on the extent of focus on energy efficient retrofit of conservation properties? (116 responses)



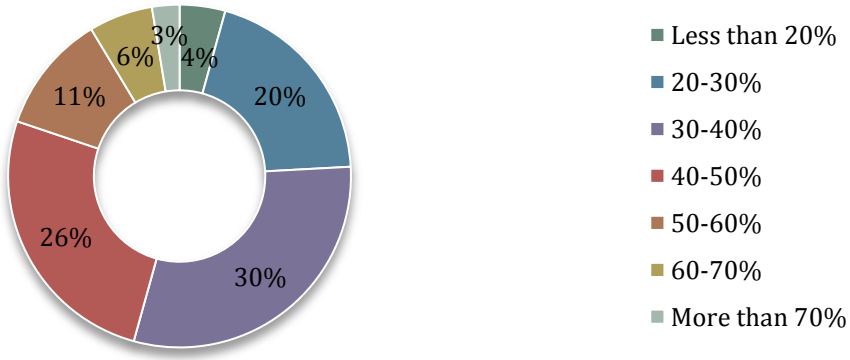
Q27: When thinking of all the existing buildings in Great Britain, around what percentage do you think have solid walls? (116 responses)



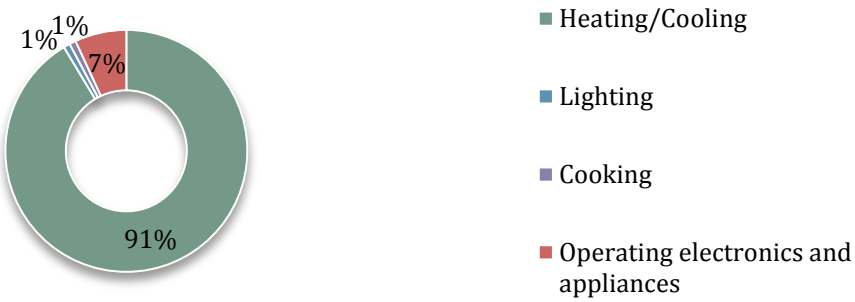
Q28: Approximately what percentage of UK GHG emissions do you think is attributed to the building sector? (116 responses)



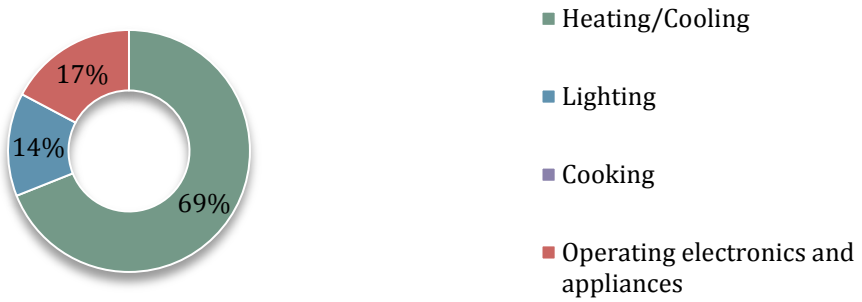
Q28: Approximately what percentage of UK GHG emissions do you think is attributed to the building sector? (116 responses)



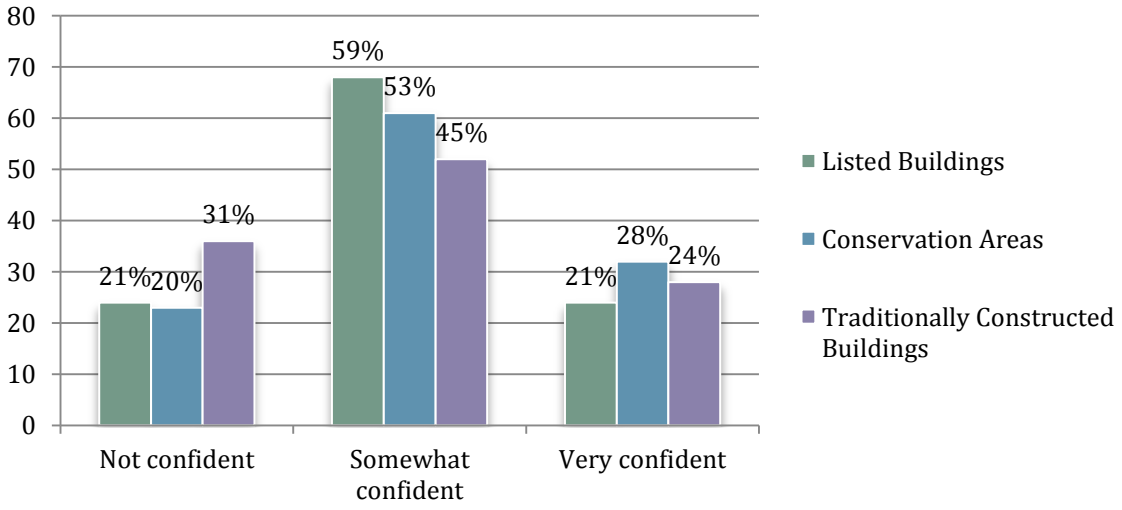
Q29: Which building activity do you think has the biggest impact on GHG emissions in residential properties? (116 responses)



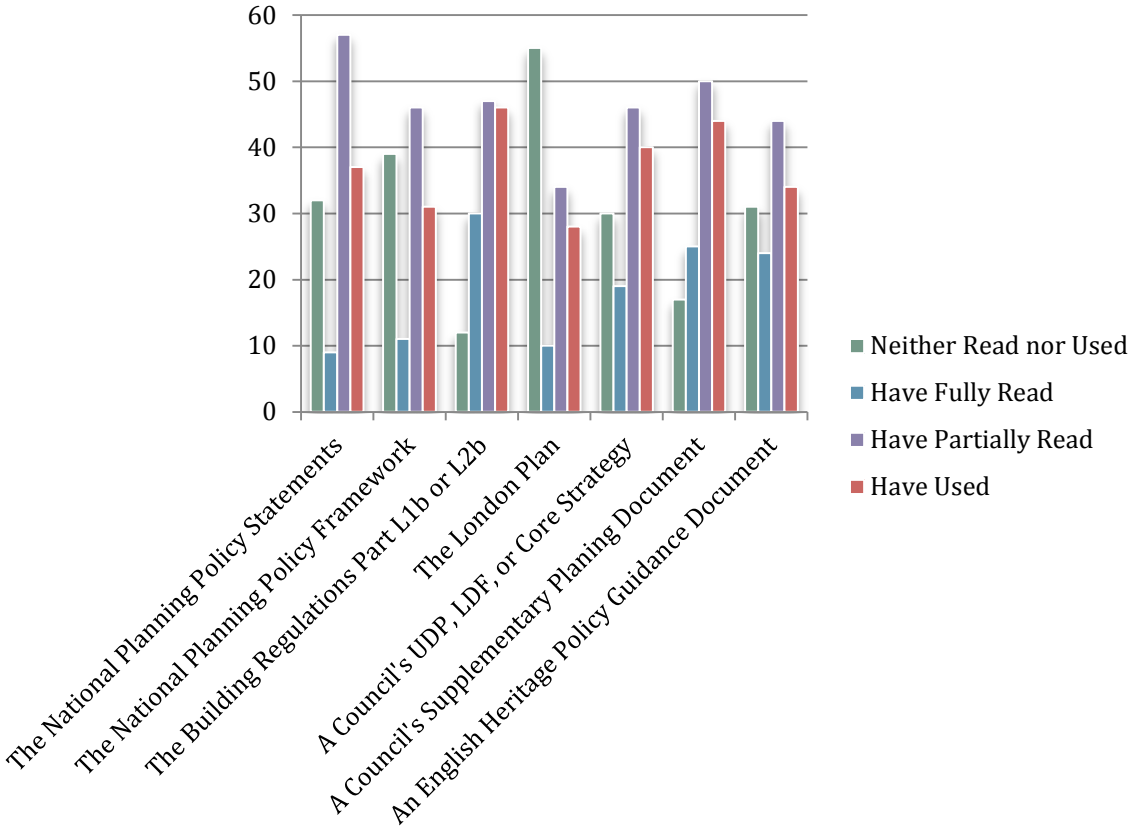
Q30: Which building activity do you think has the biggest impact on GHG emissions in commercial/office properties? (116 responses)



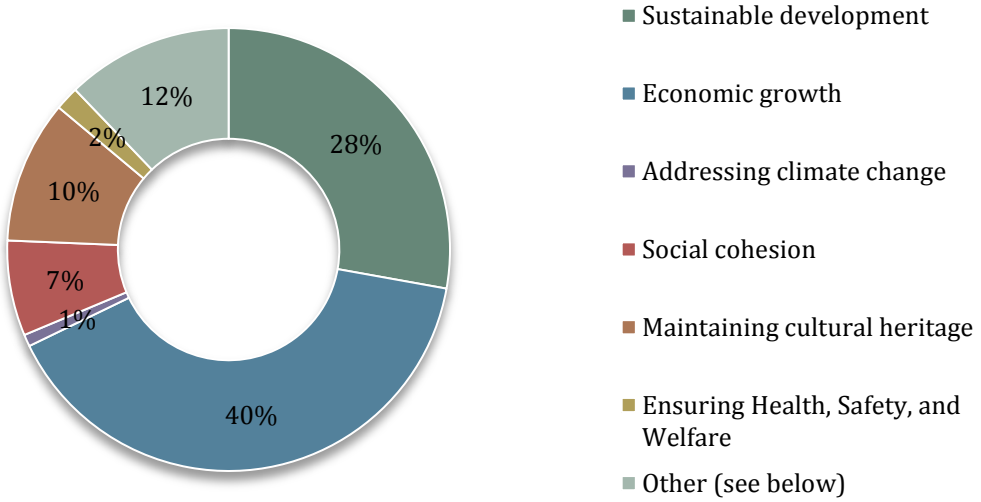
Q31: For each category, please indicate how confident you are as to the defintion of, and the rules and legislation regarding the retrofit of: (116 responses)



Q32: Have you ever read and/or needed to use any of the following? (116 responses)

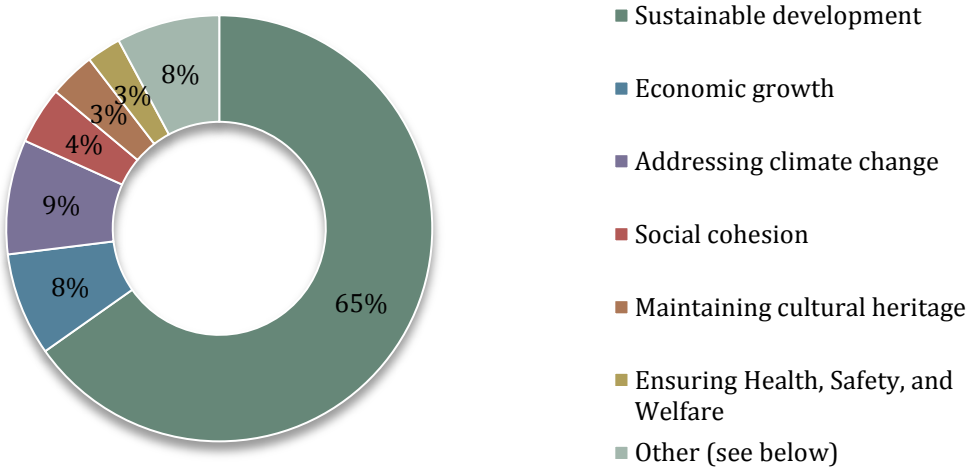


Q33: What do you think is the current main priority specifically for UK Planning? (116 responses)



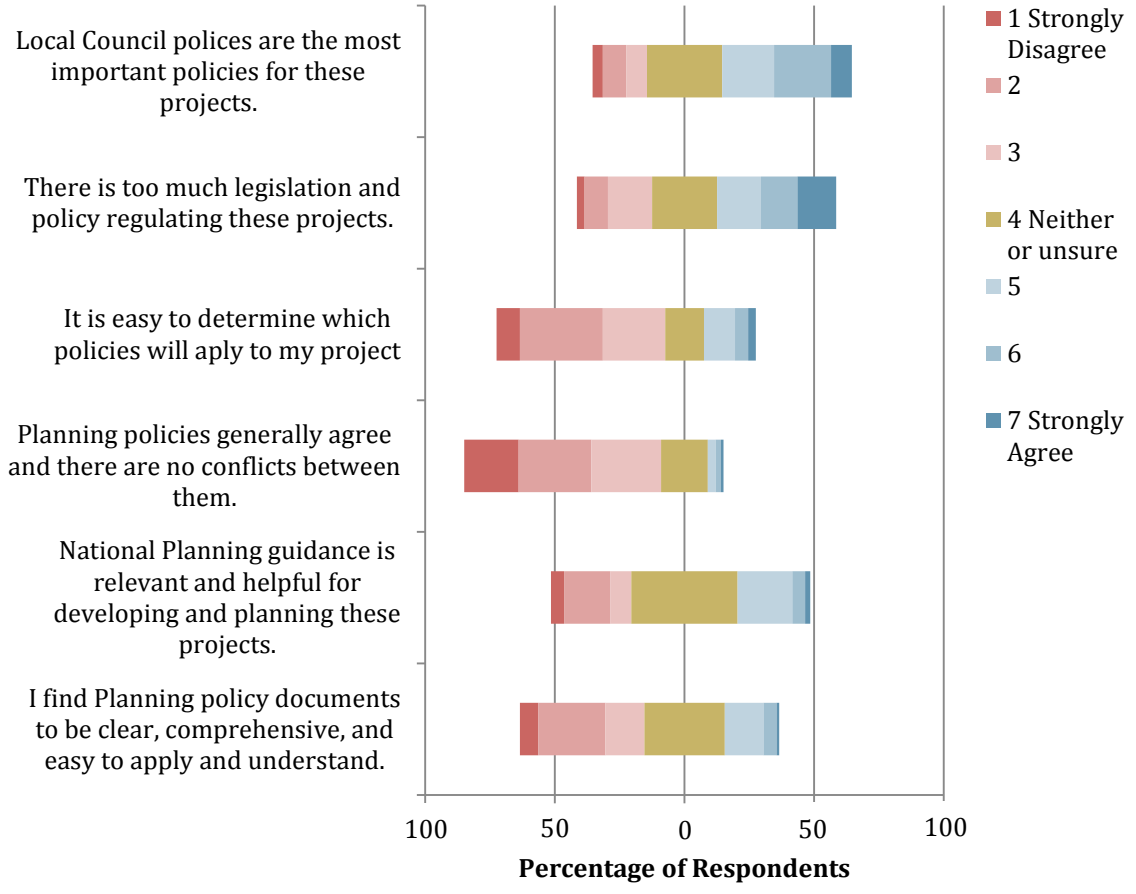
Other Responses: (3) No clear priority, (2) Applying policy, (2) Controlling and directing development, (2) Same as ever, (1) Absolute garbage, (1) Accommodating localism, (1) Balancing those listed, (1) Confused, (1) NPPF version of sustainable development

Q34: What do you think should be the main priority specifically for UK Planning? (116 responses)



Other Responses: (4) Balancing those listed, (2) Direct Development, (2) Provide Housing, (1) Applying policy

Q35: Please indicate your level of agreement with the following statements about Planning Policies, specifically thinking about the above projects. (116 responses)

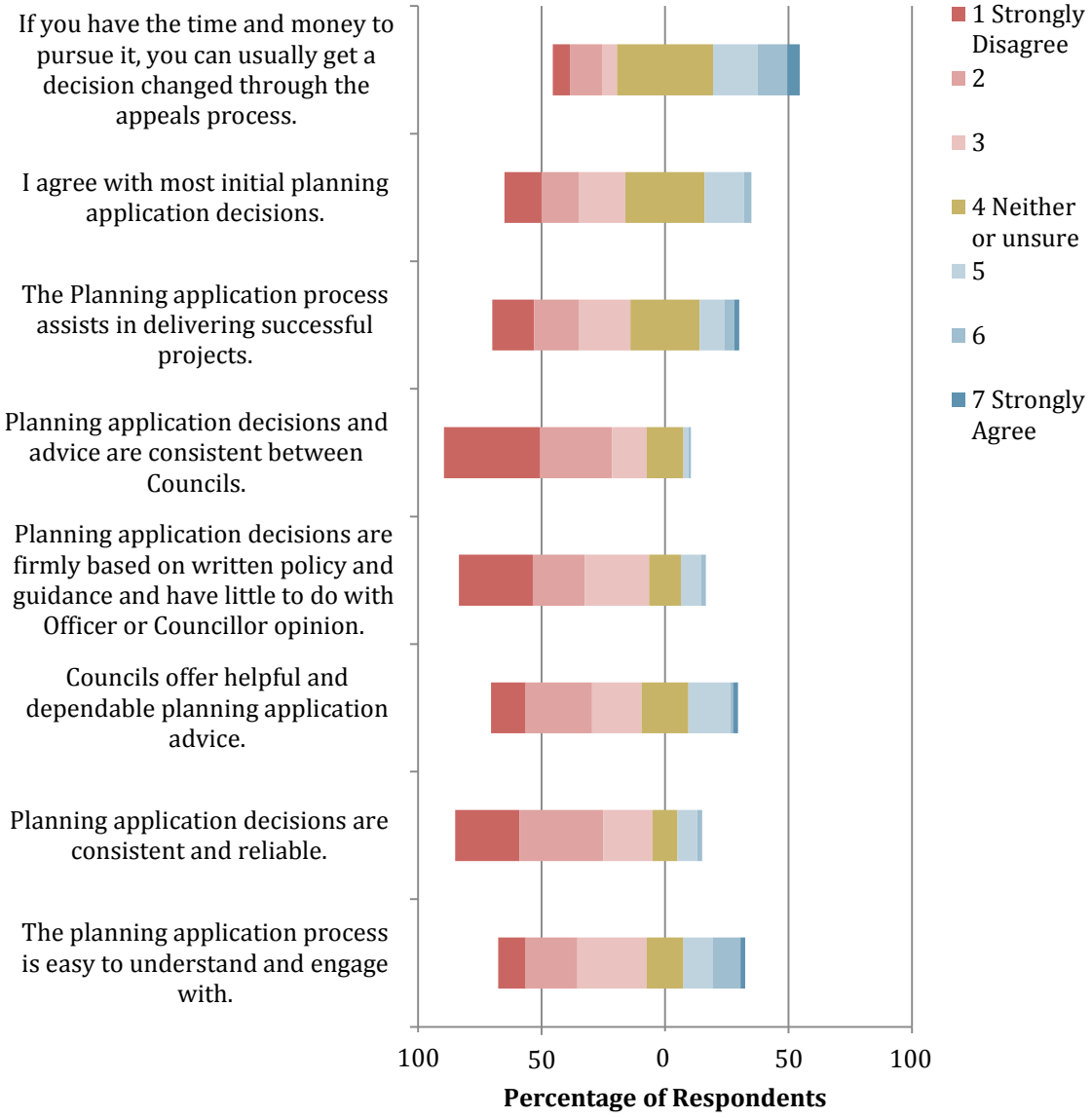


Q36: Do you have any additional comments about Planning Policy? (24 responses)

The need for extensions to dwellings to comply with policy concerning them being subordinate to the existing house, ie minor setbacks 150mm-300mm in plan, and ridge heights being 300mm lower, makes the existing envelope more complicated and more difficult to make airtight.
I have not had to deal directly with planning authorities since 2010.
Very much project dependant. Often good policy can be impeded by poor implementation, or ambiguity can lead to misinformation, which in itself can be a barrier.
In my experience it is the conservation officer and their interpretation and not the planning documents that matters.
My statements have regard to sustainable retrofit to a listed building. Legislation and policy is very conflicting on this subject being both pro conservation and sustainable development (often mutually exclusive!).
It's inconsistent.
Whilst I agree with maintaining our cultural heritage, some of the regulation attached to this (eg inability to retrofit double/secondary glazing through either deeper rebating to facilitate the insertion of double glazing whilst retaining the integrity of the window or bespoke double glazing which retains the character) seems out of date given sustainability requirements/desires.
Uncoordinated and conflicting with regards to sustainability.
Am unsure of implications of recent changes to Planning Policy.
Renewables, sustainability and low carbon systems are not really on the agenda of most Planning Departments.
All planning policies involve an element of interpretation; the crucial judgement at application stage is made by planning officers who often have little technical knowledge and concentrate on appearance with a default to minimal change.
Too corrupt or stupid for words.
The rules are often applied according to individual's and individual council's preferences at the time - this discretion is good and important on one level, but can be frustrating at other times.
They have no direct endorsement from the electorate/community.
London Plan or Regional Policies are as important as local policies.
Most of the retrofit projects in my experience never reached formal submission because conversations with planning officials (and experience of friends) led me to believe that I would be unsuccessful in any more innovative or leading edge planning application.
Planners should focus on scales of minimum 1:1000. Architects below this scale and heritage officers should support Architects in heritage issues, but the decision power should lie with the Architecture profession about buildings and English heritage regarding building of non-Architectural merit but of cultural historical merit.
Planning policy has never been an issue for me - building regulations, however, are not consistent and are more difficult to apply. Example: Part L and Part C make clear that it is important that a building of traditional construction is allowed to remain vapour permeable and "breathable", however, the Building Regulations concerning radon protection mandate the use of a vapour impermeable radon barrier, even where this will harm the performance of the traditional construction.
Having made hundreds of planning applications in my career, I feel the system is broken, risky, inconsistent and absurdly expensive (in terms of consultations required) and provides clients and consultants with no certainty of outcome nor clear guidance. The poor training of planning officers and rigid target based procedures are unhelpful to say the least.
Planning policy with regard to retrofit seems confused and contradictory. Energy efficiency certainly doesn't seem to hold any sway with the planners.
I would like to see much closer alignment between planning policy and building

regulations.
Planning policy documents rarely explicitly address refurbishment projects, including of listed buildings and buildings within conservation areas, and in my experience specific environmental standards (e.g. BREEAM/Code for Sustainable Homes requirements) are rare. In many cases, assumptions must be made that the general policies for new build development also apply to refurbishment projects.
Planning Policy and its interpretation differs widely between Boroughs. There is a tendency to say no to anything new or innovative. This coupled with the almost complete lack of understanding of sustainability and climate change makes carrying out even the most basic low energy retrofits incredibly tortuous for client and architect alike. The Planning system is a formidable barrier to a lower carbon housing stock.
I find that while it is difficult to find your way through which policies apply, equally there are too few that legislate/advise on retrofit & sustainability.

Q37: Please indicate your level of agreement with the following statemens about the Planning Application Process, specifically thinking about the above projects. (116 responses)

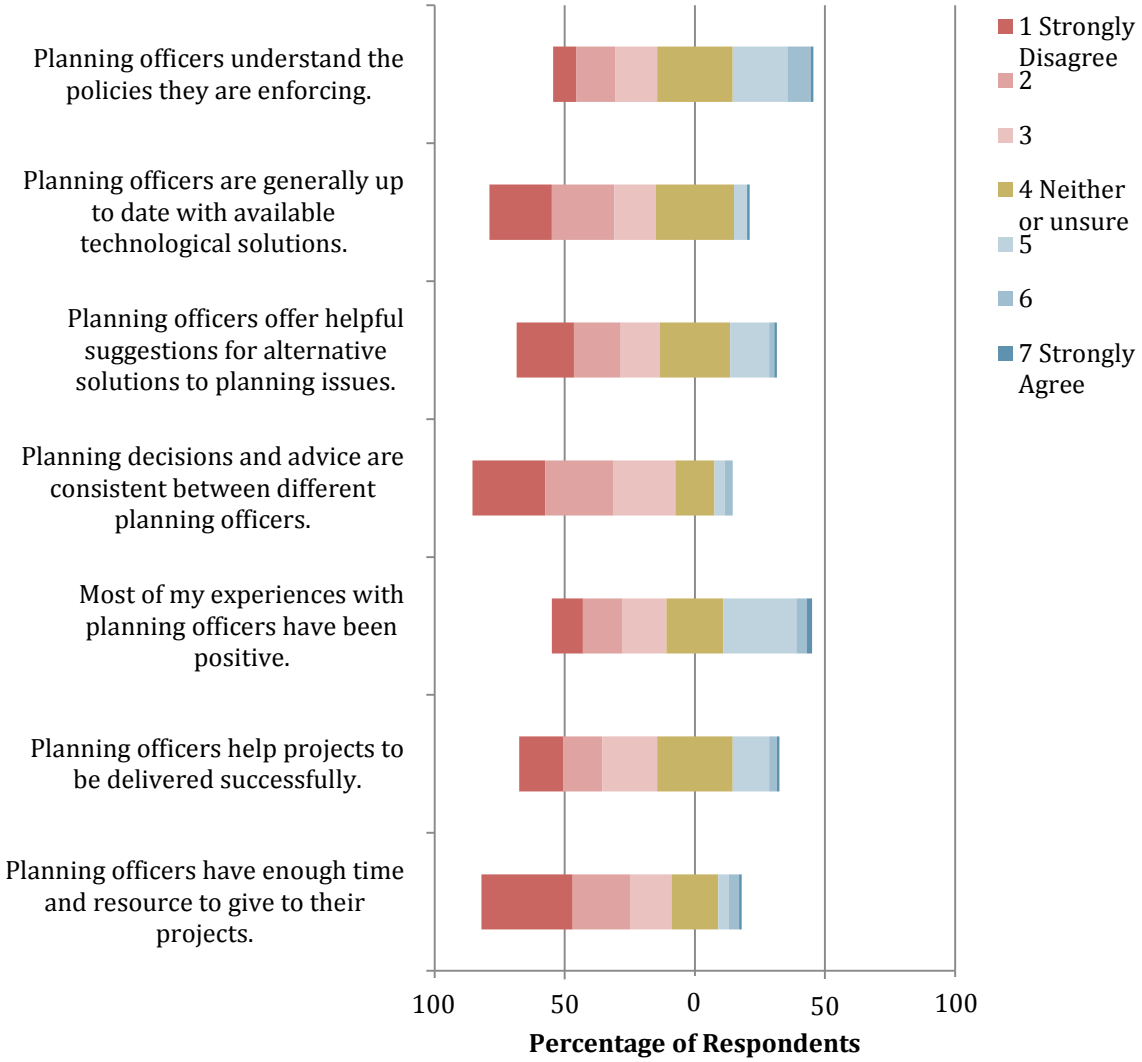


Q38: Do you have any additional comments about the Planning Application Process? (14 responses)

I have almost no experience of appeals.
The ultimate decisions are arbitrary and depends on the planning officer involved, who is bound to follow the conservation officer. If your view differs from the officers concerned then only if you have sufficient resources to pursue a case are you likely to get an answer that is agreeable. It is interesting to note that a lot of local cases seem to be around retrospective planning, which often seems successful. My take from that is that the system is not working properly if people resort to the retrospective clearance process.
Not consistent and in the main try to make your life much harder.
I feel that current changes to planning legislation are muddying the waters.
I have one application (my first) in Appeal and await the outcome.
Conservation vs. planning vs. building regs vs. carbon/energy targets is a very difficult issue, though generally the councils I have worked with have bent over backwards to be helpful. The conservation officers were astonishingly helpful at times, helping us to find acceptable alternatives.
Political influence - particularly the tension between national & local planning policies and planning committees disregarding officer advice where it is against public opinion (even where it is biased and misplaced) creates uncertainty and inconsistency in decision making and undermines the value of pre-application discussions.
Performance between councils varies widely across the country.
Frequently have to educate planners in both practicalities and even interpretation of guidance.
The biggest issue is the lack of long-standing members of staff who know the patch.
I have never applied for planning permission for any project.
Obtaining reliable pre-planning advice is the most contentious issue - it is virtually impossible, or if obtained, cannot be relied upon in the event. One of the typical bugbears is the validation process, whereby minor errors can invalidate an application and delay a decision for many weeks. Also the difficulties experienced in trying to discuss measures with planning officers prior to a decision is often fraught and frustrating.
It never feels particularly efficient.
The Planning application process is very off putting to clients as it is quite dependant on individual case officers or their conservation colleagues who have a consultation role. There is a tendency to refuse innovative retrofit measures or at best treat them with extreme scepticism. There process does not allow designers wishing to propose innovative proposals much opportunity to discuss these proposals at length. This lack of dialogue means that proposal (even with extensive design and access statements) do not get adequate consideration. This is compounded by the almost complete lack of an understanding of building physics within Planning Departments, such that any dialogue that does take place happens with only partial understanding on at least one side. Pre application usually costs rather more than most home owners can afford and presents yet another tax on carrying out energy efficiency work. It does not allow for much extra and dialogue to examine solutions in depth. It is also very slow. When combined with the full 8 week planning period it almost completely negates the great opportunity to carry out retrofit work when houses are bought and sold. There seems to be a general attitude within planning departments that climate change will somehow go away, and that behaviour change is paramount. I strongly believe that upgrading building fabric and behaviour change must go hand in hand if our CO2 emissions are to be effectively cut. There is usually very little sympathy with the notion that altering a building can have a positive effect on both culture and carbon abatement. Few councils offer any positive policy in regard to carbon reduction that is really going to make much difference (Camden and Westminster being 2 partial exceptions). Planning in the UK is a lamentable situation where it's very title is a complete misnomer. If councils were genuinely keen

about maintaining our heritage they could at least insist on all works to historic buildings being carried out using lime or other breathable products. They don't. Nor do they actively develop policies that consider how our heritage building stock can be successfully upgraded. Instead they continue to penalise the few who are trying to do the right thing. If there is one barrier to carrying out meaningful retrofit work in the UK it's the planning system followed closely by the Inland Revenue.

Q39: Please indicate your level of agreement with the following statements about Planning Officers, specifically thinking about the above projects. (116 responses)



Q40: Do you have any additional comments about the Planning Officers? (11 responses)

My experience is that the individual planning officer is critical, get a good one, and it can be an easy process and they are helpful, get a bad one and the process is a nightmare.
Depends on the officer and authority.
Conservation Officers understand the power that they wield over applicants, many are opinionated and disinclined to listen to contrary views.
Performance between officers varies even within one Council.
There's a long way to go before planning officers feel (or are told to feel) the urgency of the energy/sustainability agenda.
They have my every sympathy as they waste their time on loft conversions etc.

I have never communicated with a planning officer.
Planning Officers often lack local knowledge.
Among the Officers who are in responsible for making decisions and recommendations with regard to historic buildings there appears to be a lack of individuals who are technically knowledgeable about buildings or have an understanding of building physics. In my view, this leads to an overly great focus on superficial 'appearance' rather than meaningful, long-term architectural solutions.
Planning officers and historic building advisers are too separate in approach and advice.
Planning officers are under-qualified, over loaded and in the most part don't care. They suffer with an institutional approach predicated on the notion that saying NO is the safest option. One rarely meets with such complete intransigence or apathy as one usually finds with the system and the facilitators of it.

Q41: List up to 3 pieces of legislation or guidance documents that you think are the most useful or significant for improving the energy efficiency of existing buildings while maintaining cultural heritage. (44 responses)

Document	Count	% Respondents
AECB CarbonLite Programme	1	2.3%
BRE Publications	4	9.1%
BREEAM	7	15.9%
Building Regulations	20	45.5%
Construction Products Association domestic refurbishment publication	1	2.3%
Energy Performance Certificates	3	6.8%
Energy Saving Trust publications	2	4.5%
English Heritage guidance	16	36.4%
Historic Scotland and Changeworks publications	8	18.2%
Local Authority guidance	3	6.8%
Local plan	1	2.3%
London Plan	4	9.1%
My company guidance on refurbishment	1	2.3%
NPPF	5	11.4%
Passivhaus	2	4.5%
PPG16	1	2.3%
PPS1	1	2.3%
PPS5	2	4.5%
SPAB resources	4	9.1%
VAT regulations	1	2.3%

Q42: Do you have a suggestion for any new policy or guidance document that would help to improve the energy efficiency of existing buildings while maintaining cultural heritage? (31 responses)

Suggestion	Count	% Respondents
Redefine conservation principles to include energy efficiency	8	25.8%
Provide approved measures for heritage and traditionally constructed buildings	7	22.6%
A national statement of priority and a method for measuring and comparing objectives	5	16.1%
Agreement between Building Regulations and Planning	4	12.9%
Consolidate and simplify existing (diverse) guidance	4	12.9%
Incorporate whole life-cycle energy costing into assessments	3	9.7%
Need better testing and research	3	9.7%
Agreement between Councils	1	3.2%
Allow solar panels in Conservation Areas	1	3.2%
An agreed industry standard for energy conservation	1	3.2%
Develop strategies at Conservation Area/ neighbourhood scale	1	3.2%
Improve BREEAM for existing buildings	1	3.2%
Provide financial assistance for traditional improvement measures	1	3.2%
Revise Feed in Tariff to accommodate heritage limitations	1	3.2%
Thermal inefficiency tax	1	3.2%

Q43: Please use the space provided to share a brief example of a positive experience you have had with UK Planning and a conservation affected retrofit project. (29 responses)

Positive experiences on significant Listed Buildings of National importance, when you get to negotiate with a senior member of English Heritage.
This is a little difficult, we have had some good outcomes but these have been the outcomes of some fairly tortuous planning negotiations, appeals etc. so are covered in the box below.
Institute For Sustainability FLASH debate, 29 June 2011: Westminster Planning Officer said the Borough Council wanted to say "yes, but" instead of "no" to requests to carry out energy upgrades on Listed buildings (some 85-90% of Westminster stock) and cited an instance of external insulation being permitted on a brick-faced terraced house in a conservation area as an experiment, which was deemed to be acceptable (other similar houses were rendered, although the neighbours of this particular house were not).
Huntingdonshire District Council and Hilton Hall - the Officers and English Heritage were willing to listen to design considerations.
We have been given a grant of £8000 towards a new roof (including a high level of insulation) from our council (Powys Council Historic Buildings Fund).
Decisions are too often based on statistics and policies rather than well thought out rational points of view
No positive experiences
Kensington and Chelsea provided helpful advice and responded to queries all within an acceptable timescale. The focus was on assisting the project delivery. Other buroughs seemed more politically driven.

None
When applying for Listed building Consent for a Grade II* property EH were very helpful in developing the technical solution which would minimise risks to the fabric of the building. Project was to bring an uninsulated attic space back into habitable use.
I have worked on retrofit schemes where the planning/conservation/heritage bodies have been extremely supportive and constructive, offering advice, alternative solutions and a great deal of enthusiasm and drive for the project, which has undoubtedly helped in its success. This is by no means a common standard and reduced budget cuts within the departments have mean that Planning Officers are so over stretched that they are not only reluctant but are unable to give projects the attention they need.
None
Difficult to think of one
After pressure from a Village Parish Council, who have published their own Village Design Statement, a Planning Officer was persuaded to accept steeper pitched roofs, varied wall finishes and roof tiles, render and weatherboard colours, etc. in a 9 new house development near to a 16th century cottage upgrade. Rarely, if ever, does the leadership on quality of design, etc., emanate from the Planning Department.
COs were helpful in finding an acceptable/suitable place to site solar PV for a listed farm in the non-historic curtilage.
No positive experience ever.
They have enforced some Code for Sustainable Homes and Ecohomes requirements which have resulted in a more sustainable building.
We have installed solar heating on a number of conservation area properties that have been supported by the local authority. They are not visible from street level.
Westminster - knowledgeable officers - respond quickly and sensibly - understand constraints of project and possible solutions. Tower Hamlets - very proactive in finding practical sustainable solutions for listed buildings- recognise that a commercial use may be necessary to secure the future of a listed building.
When applying for Listed Building consent for fitting PVs and solar thermal panels to the upper rear mansard, there was no problem at all with the Islington Conservation Officers; whereas poor Robert Cohen got issued a demolition for the solar thermal panels on his house at 89 Culford Road as Hackney Conservation Officers didn't get it - he won on appeal!
Hackney council were very supportive of a refurbishment of a grade II listed school and mindful of the need to upgrade existing windows and the practical requirements of a working school.
Uttlesford. Improvements to a 17th century farmhouse. Very helpful conservation officer willing to discuss ideas and provide input. Does not have enough time.
Advice from B Regs officers given freely and with consideration of the building.
A new extension, link and summer house in Berkhamsted made with traditional materials in a modern design was supported after the length down the garden was adjusted.
I have not yet had any positive experience.
Local Building Control Officer was prepared to be pragmatic regarding loft insulation, given the constraints of the limited space available; concerned about the spirit of the regulations (i.e. avoid wasting energy and therefore costing the homeowner money) rather than the detail
a historic building officer was not particularly attentive to the inside of an old elm framed agricultural barn which meant we could renovate it with sustainable materials and make it energy efficient. this was a positive result made possible by an indifferent approach taken by the authorities.
None
junior planning officer had a conservative approach to a proposed permitted development as it would ' ruin the house's symmetry', even though it was subject to PD. Use of precedents in the neighbourhood were rejected by the junior PO, but the head of

the planning department however bought the argument and that it did fall within PD. (and indeed, it was approved under PD) This was Haringey.

Q43: Please use the space provided to share a brief example of a negative experience you have had with UK Planning and a conservation affected retrofit project. (38 responses)

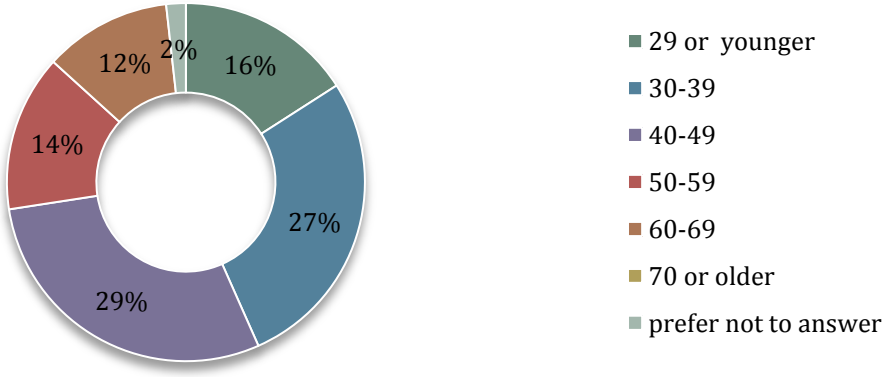
Any discussion with a local authority planner/conservation officer regarding extending houses in conservation areas. For example maintaining the same ridge height to the extension as the house.
We have quite a few stories for this section so I will select two. One- External insulation in Brent, refused at committee by some completely uninformed councillors who were being petitioned to refuse the application by some completely uniformed residents and out of date conservation officers. This one had to go to appeal at the clients expense to gain approval. The external insulation was proposed for the rear and flank walls only. If you want details on this project please contact us. This was completed in May 2012. Two- Sash windows in Islington, I could not quite decide which box to put this in as if fits in both 29 and 30. We submitted some drawings for triple glazed sash windows and got an outright no. We then submitted some drawings for double glazed sash windows which also got a no due to the applied glazing bars. We made up a sample of the double glazed with applied bars and took it to planning then then reconsidered pending some tweaks. We then presented the sample with one sash as per their tweaks and one sash with in extra layer of glass (i.e triple glazed). We asked them to 'spot the difference', they agreed that there was 'no perceptible difference in appearance'. However due to concerns about 'architectural integrity' they could not approve this for all of our windows. They approved them for the section of building we were rebuilding and asked us to install the double glazed sash windows in the retained section of façade. They gave this approval with the note that this was a pilot and therefore not a precedent for future projects. This project is on site now, windows due to be installed in the spring. All of this work has been at our expense.
Planning officer dictates materials required on new housing (BEHIND existing) and stipulates must have chimney at either end of roof ridge (one fake) to match other older houses in area.
South Cambridgeshire District Council show demonstrated no three dimensional understanding on a listed cottage in Orwell.
Our Listed Building Conservation Officer did not want us to have double glazed windows, and suggested we repair the existing windows, or in some cases where they are in very poor condition, replace with new single glazed casements to match what was there before. She suggested fitting secondary glazing instead because it can be removed. Our architect helped us push her to allow us double glazing on the new windows, and she is now allowing us to have a very poor U value double glazing which maintains the traditional appearance of the windows with very thin glazing bars. We were quite disappointed with her stance.
My house is c 1650, the window frames had all rotted away (they had been fitted in 1970's and were not in keeping with the property). We sought to replace with a modern double glazed hardwood frame (painted). The council rejected this, insisting on soft wood frames, painted, and single glazing, they also specified the size and shape of the glazing bars, the method of fixing etc. Insisting this was as per original. In fact given the house is 1650, it is likely there was no glass! In less than 6 years the windows have had to be repainted 3 times (as the paint is stripped by the salt air) and one window has had to be completely replaced as the soft wood rotted from the inside (there being no damp proof cosre and walls are largely porous). If we could have done it properly at the start, it would have been more efficient and whilst initial higher cost, over the longer term much

lower cost. To my mind this is madness, in effect the conservation officer is imposing their will and forcing me to incur greater cost. It is almost as if it were punishment for buying the house. Others in the area are used as holiday homes, are in poor condition, whilst ours is lived in and therefore as we add to the local economy we ought to be encouraged not discouraged.
Our experience with planning was fine - Building Control is a different matter! No understanding of traditional buildings!
Inconsistent and misleading advice from a local authority on a particular project
While working up a current application for a sustainable retrofit within a listed building Westminster City Council have been very inconsistent. Depending on which level (Councillor or Officer) and which individual who is consulted, a differing opinion seems to result. In this particular example a Councillor at WCC encouraged further sustainable potential to be realised from a submitted scheme. The project was consequently withdrawn and considerable time and money spent on redesigning. Upon re-submitting the enhanced scheme, other members of WCC (both Councillors and Officers) were strongly against the proposals. Inconsistency during planning process with regard to policy interpretation and opinion increases uncertainty, costs and prevents development.
All project have been damaged and delayed but inconsistent unhelpful Planning Officer
Rejection of incorporation of double glazing into plans
I DO NOT FIND THE PLANNERS PARTICULARLY KNOWLEDGEABLE OR HELPFUL
On more than one occasion planning advise and support has not only changed with the appointment of a new planning officer but it has been completely reversed, this is extremely bemusing.
On a current project we have been forced to retain a very small section of heavily painted solid brickwork at first floor level that contained a French door and two windows and only about 3m2 of brick with all ground floor second floor and roof demolished. The original intent was to demolish the entirety and reinstate new construction of insulated external walls and windows etc. gut instead it is now solid structure and probably highly inefficient, not to mention huge cost increases of supporting the strip of brickwork which no one will even notice when the project is complete as the front will all be painted again.
Almost all planning applications.
Inconsistent views and a totally unreasonable attitude towards a tiny conservation matter in the context of a considerable scheme with huge wider benefits
Request to put solar panels on property! when less than 100 yards away 5 houses with solar panels!
We had to remove solar thermal panels from a barn conversion initial application because of an objection by a Conservation Society. The Planning Officer said that he would grant permission in a subsequent minor amendment application (if we paid the additional fee of course). Routinely, neighbours raise objections to "noisy" air source heat pumps even though they know nothing about them and inevitably have no issue once they are installed.
Usual bureaucratic mess-ups of lost documents, time wasted, officers not following through and "taking ownership", etc.
Currently we are trying to apply external wall insulation (render over phenolic foam) to our house, which is not listed or in a conservation area, but is traditionally built but already externally rendered. The planning guidance is that EWI only requires planning permission if it alters the external appearance of the dwelling. When asked whether planning permission was required, the local planning dept (Cotswold DC) said that it was, as the work would alter the appearance. I had to engage a local architect to negotiate whereupon the judgement was changed in that the alteration was 'de minimis' (?) - ie not significant.
Councils systematically opposed to Listed buildings alterations, even minor. No sustainable approach to listed building at planning level Lack of time to deal with applications or personal requests, negotiations, discussions with design team. Lack of

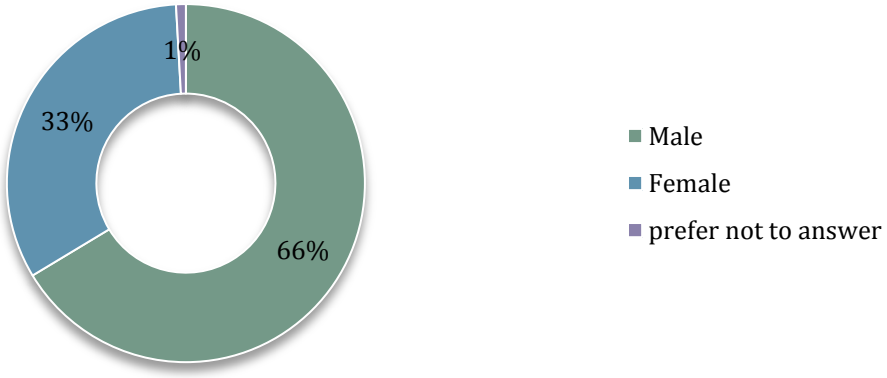
knowledge of technical advancements (i.e. extra thin double glazing, solar power etc...)
Very resistant Planning department that were not willing to make any conservation concessions to achieve sustainability targets/objectives.
A planning application to convert a redundant locally listed building in a conservation area from offices to residential was held up fo several months while we tried to convince the LPA that meeting all of their access/energy efficiency/space standards would destroy the fabric of the building that were trying to conserve. A compromise was reached, but only after some months delay, resulting in the conversion scheme being shelved. The building is still empty.
There is a lack of understanding of how to achieve sustainable buildings, most noticeably on a case where we had to install solar panels for electrical production but for the same cost could have increased the insulation and reduced energy consumption. There is too much focus on renewables before everything else has been considered. We have also been turned down on installing secondary glazing in lieu of double glazing to a Grade II listed building because of the visual impact at ground level.
119 Ebury Street.... Requirement to retain and repair poor quality 1960's standard timber windows fitted into altered openings in a Grade 2 listed farmhouse; general presumption against improvements to glazed elements; general presumption against fitting solar thermal and solar pv panels onto roofs.
Having to provide detailed plans from survey of flood risk she their records should show that not exist, this was not relevant to the project- box ticking. Planners showed poor understanding of mature tree management and TPO status, with respect to boundary fence project in conservation area
I am writing this as a householder and an architect (it was difficult to fill in as a householder so I am logged in as an architect). It is not permitted to secondary glaze the windows of my 1770 terrace house in Highbury but I am thinking of just doing it except for the ground floor front windows until vacuum glazing gets more affordable.
The conservation officer on the project mentioned in question 29 didn't seem confident on the subject matter and relied a lot on the opinion of the English heritage representative.
Conflict with Building Regs over the energy efficiency aims and the need to pay due respect to the building.
A new mews house in Kensington and Chelsea was denied planning 3 times until it became an exact copy of the Grosvenor estate best practice guide in relation to mews houses on their estates.
Rear extensions in conservation areas. I always use these example of extensions and alterations to Listed Buildings National Gallery British Museum National Portrait Gallery
Subjective interpretation of "sense and place" and what needs to be conserved.
119 Ebury Street - I might leave you to fill in the rest!
Local Planning Officer did not keep to promised timescales and was very difficult to contact
we tried to use external straw bale insulation and lime/hemp render on an old elm framed barn but this was vetoed by the historic building officer. we compromised on a wood fibre board but as the straw came from the farm on which the building stood it could have hardly been more sustainable. it felt like the authorities flexing their muscles for the sake of it, rather than the building.
Our first deep retrofit within a conservation area took12 months at planning to win, following deliberate obstruction of the due process by the case officer involved. Upon success the head of Planning within that borough advised that when complete we should enter it for a local design award. The project has shown how a modest terrace house in a conservation area can be taken from a carbon emission rate of about 6.5 tonnes per year down to 1, and how this can be done sympathetically and with care. When complete we

duly entered it for the awards. The official who visited the project under the guise of the awards process used that opportunity to take pictures in order to develop an enforcement case against my client. This was take to appeal and I am glad to say that the case was found in my clients favour.
Haringey council: they regarded the application of insulated render to both front and back facade as ruining the building's symmetry, even though the front facade and part of the back facade are already rendered; and then went on to say " besides, it does not save a lot of space heating energy anyway:" He was surprised to hear that 40-60% space heat demand could be saved this way, but equally did not appears supportive or convinced, despite the fact that no planning permission would be required. (this was suggested as part of the above PD) I thought it was shocking that someone at the forefront of enforcing and protecting sustainable development, he made that statement and was not aware of the facts!

Q45: Which category includes your age? (114 responses)



Q46: What is your gender? (114 responses)



Appendix H : APPLICANT INTERVIEW SUMMARIES

This appendix provides summaries of and designations for the 10 interviews of applicants.

H.1 Applicant-1

Applicant-1 is an architect who talked about two different projects, one residential within a listed terrace, and one commercial with a listed component, each located in different London Boroughs. Overall they felt the experience they wanted to share was negative.

The commercial project is located in a Borough that Applicant-1 felt is responsive to climate change issues. Applicant-1 has been involved in trying to redevelop the site for over 15 years. There were issues with a listed wall as part of the overall site, and the conservation officer trying to expand the listing to include the entire building. Applicant-1 ended up fighting that expansion of the listing and winning. Eventually, when a planning application was put through, a large turbine was shown on the roof and the conservation officer wanted to know why there weren't more wind turbines in the proposal. In the final project, insulation was put externally on the unlisted side and internally on the listed side. Double glazing was incorporated into the listed wall but it required inventing a new glazing system to allow for external safety grills that also had to be preserved. This process of negotiation just on the windows added approximately 3 months to the project.

The residential project is the architect's home. The house was insulated internally in the 1980's before planning was more strict about listing. At that time, windows were already an issue, and were not allowed to be replaced. The PV was put on 3 years ago as part of a grant programme through the Council (which is now gone). At the same time, the windows were draught proofed as that was allowable. Applicant-1 admitted they haven't tried very hard to get the glazing approved, primarily because they've been told it won't be approved, and that secondary glazing will also not be approved.

Applicant-1 expressed that their biggest concern was how to upgrade the building envelope. They believe insulation should be done externally but recognised that this could create both visual and technical problems. However, they felt that replacing windows or adding shutters would be reasonable if done sensitively, and also more historically appropriate as this was done historically due to fashion, so why not be able to do it now?

As an architect, Applicant-1 felt it was important to advice clients of the dangers and risks with retrofitting conservation properties, but that it should be encouraged. They felt it was part of their mission to be an environmentally responsible practice, and that they had a professional responsibility to argue to make the case.

With both projects, Applicant-1 felt their experience with planning was typical.

H.2 Applicant-2

Applicant-2 is an architect who was hired to retrofit a derelict Grade 2 timber-framed barn to be used as a venue for hire for events like weddings. They were particularly interested in using straw-bale as insulation and natural materials that are produced on the farm, in part because the client was interested in creating a sustainable 'eco-venue'. Overall they felt the experience they wanted to share was negative.

The barn was not in good shape and needed to be completely retrofit to bring it up to standard. Applicant-2 wanted to use straw bale and thatch that could be produced on the site to upgrade and in the future maintain the building. In addition, the original proposal included triple glazed windows.

Applicant-2 reported that there was significant resistance on the part of the planning officer to change the original footprint of the building, based on the historic value of the building footprint. Although most of the cladding was rotten and needed to be replaced, the main issue was the depth of thickness of the straw bale which would change the footprint of the building. Applicant-2 felt this was less important than the internal beams and structures that would be able to be preserved and visible and since the exterior needed to be replaced, why could it not be replaced with something else? Additionally, Applicant-2 is very keen on timber buildings and is aware that certain insulations can trap moisture and rot beams so was interested in using straw-bale as an insulation solution that is breathable. In the end they compromised on a wood-fibre board but this was disappointing to Applicant-2. In addition, there were issues with approving the triple glazing and instead, double glazing was installed.

Applicant-2 felt that in some ways the decision-making applied by planners was inconsistent or that they didn't understand materials. For example, they had no issue with new concrete flooring throughout the entire venue which Applicant-2 felt was not original or sustainable.

Applicant-2 felt their experience was not necessarily typical as the project was not typical. In addition, although they didn't agree with the planners over these issues, overall they felt they had a good working relationship with the planners and were able to come to solutions quickly, even if they weren't the desired solutions. Because of this, they feel their project probably came out better than most.

H.3 Applicant-3

Applicant-3 is an architect with 20 years' experience who talked about the retrofit of a modern 1960s Grade 2 listed school building for a London Borough. Overall, they felt the experience they wanted to share was positive.

The project included the development of a new building and the upgrade of the existing listed building. The main issue with the retrofit project was that 90% of the façade is made from windows and was single glazed. Due to the poor thermal performance of the windows, the school had to be closed a few times due to overheating in the summer. A major factor in the brief was to make the building more energy efficient and useable.

Because the school was designed by a famous architect, and was in use throughout the project, Applicant-3 felt the planners were under a lot of scrutiny from external parties including English Heritage and other interest groups. According to Applicant-3, the planners took a step back and let English Heritage take the lead, basically signing off whatever EH suggested. The managing director of the architecture practice had an existing relationship with the EH representative and so in general, Applicant-3 felt the project went very smoothly.

A bigger issue on this project was the relationship with the contractors because they brought their own constraints related to time and money. Applicant-3 felt they spent more time arguing with contractors about conservation issues.

Applicant-3 was surprised that the project went so well with the planning officers as they expected them to be difficult. Although this experience went well, Applicant-3 stated they would still have reservations about future conservation projects unless it was with the exact same team and with EH involved, which they commented was unlikely.

H.4 Applicant-4

Applicant-4 is a conservation architect who works on projects in London. They discussed a number of projects in the interview. Overall they felt their experiences with planners were positive although they raised issues regarding many other aspects of the development process.

The first project discussed was a conservation area residential building in multi-tenancy where residents were interested in upgrading their windows. However, in a multi-tenanted building, policy suggests that all of the windows need to be replaced at the same time. The windows are technically owned by the leaseholder and so a 'landlord's license' is required which alone can cost up to £5000, before the cost of the bespoke windows. This deters residents from pursuing the upgrade as the energy saving cost would not justify the cost of replacing the windows.

The second project discussed was a listed residential terrace. The windows on the ground floor were architecturally significant and so were restored with draught proofing and improved air tightness as well as new shutters. The windows on the upper floors were replaced with new double glazed units.

The third project discussed was a Georgian terrace house in a conservation area. In this instance the client wanted a large number of changes and upgrades to the property including redesign of the internal layout. Planning permission was granted, however, an issue with this project was the client ignored the planning decision and instructed the contractor to build things that were not approved. Applicant-4 warned the client what they did was illegal. Applicant-4 commented that with the significant changes to the building, an observer would have to scrutinise the submitted drawings to identify what was approved and what was not, so the client would probably get away with it and after so many years it would be approved by default.

Applicant-4 commented that they had more trouble with building control then with planners, as sometimes planning permission would be granted but it would not be possible to satisfy the building regulations requirements within the approved envelope by planning.

Applicant-4 also discussed differences in responses between planning officers from the same Council saying some were more helpful and responsive than others. In general they felt they got on better with conservation officers and got quick responses from them whereas they had worse relationships with case officers who would often not reply for weeks.

From their perspective as a conservation architect, Applicant-4 felt their experiences were typical.

H.5 Applicant-5

Applicant-5 is an architect. They discussed two projects, both residential terrace houses in conservation areas in two different London Borough. Overall, they felt the experience they wanted to share was negative.

In the first project, the front façade of the building was to be maintained but the building behind the façade was to be demolished and re-built to Passivhaus standards. They went for extensive pre-advice meetings. At the first they were told 'no'. In subsequent meetings they managed to convince the conservation officer they were truly interested in carbon reduction and the officer agreed they might be able to support it. In the end there were four different applications for the project and it took a year to reach agreements before demolition and construction could begin.

The second project involved externally insulating the front façade of the building. Applicant-5 noted that it was entirely unclear about whether or not this was PD or not, and went through the application process as they did not believe it was PD. This was

approved in a timely fashion, but Applicant-5 commented that the process was unpleasant.

Applicant-5 held the opinion that planning officers were generally not trained about carbon control and that they appeared to be generally predisposed to believing that the applicant is trying to cheat the system. Applicant-5 agrees that many developers do try to get away with things, and that this leads to a poor environment for progress. Applicant-5 has the belief that no officer was ever fired for saying 'no' to an application and that there is a predisposition to saying no because it's safe, and because it allows projects to move through the system so they can hit their 8-week application processing targets. Applicant-5 feels that this polarised environment doesn't allow those skilled in conservation and those skilled in carbon reduction to come together to reach consensus and make progress which is unfortunate because there are skilled people on both sides but they tend to get entrenched.

Applicant-5 also commented on the added time and cost that trying to take forwarded energy efficient retrofits to conservation properties tends to contribute. This means that only dedicated clients tend to be willing to attempt these projects. Applicant-5 also commented on their own loss of profit on some of these projects, and how this meant they couldn't focus solely on retrofit projects of this nature as they would not have confidence they could sustain their business.

Although they noted that every project is unique and therefore not typical, the overall experience of planning was typical- and not just for these types of projects but for other projects as well as some of the problems are endemic within the planning system.

H.6 Applicant-6

Applicant-6 is an architect. They discussed a residential retrofit project to a listed building in Hertford. Overall, they felt the experience they wanted to share was negative.

In this project, Applicant-6 was hired to do an energy efficient retrofit to a listed residential property. There was already one application for the design changes to the building which was approved. They wanted to put solar thermal panels on the rear, south-facing elevation that faced away from the main street frontage. However, the roof was visible from a public highway to the rear and public footpath. Applicant-6 noted that PD allows 115 or 200mm above the pitch line but because the building is listed, the conservation officer found any projection above the pitch of the roof unacceptable.

The next application was not turned around by the Council in the 8-week statutory period because the conservation officer hadn't made a response and Applicant-6 was contacted by the Council to ask if they would reconsider the proposal so they decided to withdraw

the application. Another application was submitted about 12 months later which applied for the use of solar thermal panels which could be incorporated into the roof finish- not something that 'sat on top' to the same elevation. The Council indicated they would not approve the application so it was also withdrawn.

The project has gone ahead without any solar thermal or PV panels. Applicant-6 noted their disappointment that the building was not able to be retrofit in a holistic manner when it was undergoing a complete retrofit and that future minor interventions may not be as successful or impactful.

H.7 Applicant-7

Applicant-7 is a development manager for one of the London Great Estates. They didn't speak about one project specifically but about experiences from across their portfolio. Overall, they felt the experience they wanted to share was negative, although they commented that one is more likely to remember negative experiences.

Applicant-7 commented that the overall negative impacts of planning on projects has been to prolong the process and has resulted in a number of projects being 'watered down' with respect to their sustainability aspirations. In general, they felt projects which tried to achieve higher sustainability objectives were delayed by on average 6 months due to planning issues. Applicant-7 remarked that even when they go through the pre-application process, it is not sufficient to put in an application with a reasonable enough level of confidence that it will be approved. So many projects have gone through applications that have had to be withdrawn or which have been rejected and resubmitted. Applicant-7 highlighted the desire to improve much of their stock through secondary glazing which has most often been rejected.

Applicant-7 commented on what they saw as a dogmatic adherence to policy by planners who don't have good guidance and tend to approach proposals from a negative perspective. This leads to decisions based solely on precedents or on unclear guidance. Applicant-7 believes many planners start with the position that if there is change, the change is probably harmful.

Applicant-7 felt that the definition of 'harm' was poorly understood and that interventions which are wholly reversible but would contribute meaningful benefit to the building or tenant are still rejected. They also commented that every different officer and different authority will have different opinions about 'harm'; and, that some are easier to work with than others. Applicant-7 also commented on the tendency of officers to say 'no' commenting that it is easier and removes the risk of an officer or Council being criticised in the future.

As a the Estate has a sustainability policy and the majority of their buildings have some sort of conservation value, Applicant-7 felt that it was not an issue that they could avoid and that they were committed to continue working on combining the objectives of improving energy efficiency while maintaining heritage. However, they noted that they often meet only the minimum standard of their Estate policy and not the maximum potential, although they continue to try. Since the Estate has a long-term objective, Applicant-7 felt that policy and opinions may change in the future and that they will be able to do more to improve their building stock then.

As one of the Great Estates, Applicant-7 felt they might be scrutinised more by the Council so that the Council is not seen to be 'doing favours' for a large landholder, however, knowing other local developers, they feel that their experience is generally typical.

H.8 Applicant-8

Applicant-8 owns a 2-storey freestanding listed home in Cambridgeshire. They were interested in building a 1-storey eco-extension to the building and making minor changes to the existing buildling. Overall, they felt the experience they wanted to share was negative.

Before purchasing the house, Applicant-8 met with the local conservation officer specifically to discuss the possibility of the extension as they didn't want to buy the house if it was not going to be possible. Applicant-8 said that the officer was generally favourable towards the prospect with the caveat that it would need proper approval and consultation and was more concerned with the introduction of an upstairs bathroom in the existing building. Based on this information, Applicant-8 purchased the house.

Approximately one year passed between this meeting and the intention to do the work including the purchase of the house. In this time, the conservation officer Applicant-8 had spoken to had left the Council and a new conservation officer was in post. At the first pre-application meeting, the new officer refused the proposal of the extension. Subsequently, the officer came out to the house to look at the building and site and suggested to Applicant-8 to hire a conservation architect to draw up detailed designs.

Although the conservation officer provided a list of conservation architects to Applicant-8, they did not have positive feelings after interviewing several from the list. So Applicant-8 found a different conservation architect that they liked and felt they could work with. The architect drew up detailed designs and a pre-application meeting was held at the Council. This meeting did not go positively and it was suggested that another meeting be scheduled at the building to be able to see the proposal in the context.

The meeting at the house did not go well as the Applicant-8 reported that the conservation officer criticised their occupation of the rooms of the existing house and placement of furniture. The officer also suggested they remove an existing extension built in the 70's and put the new extension there. The architect objected to this as it would disrupt the ability to keep the thatch on the existing building. Applicant-8 felt that the conservation officer didn't understand enough about construction to see the problems. Applicant-8 reported the meeting went poorly and in the end it was agreed they would try to draw up a proposal which replaced the existing addition with a new extension.

The architect worked on the new scheme but there were many problems with making it work. In addition, Applicant-8 had wanted a sustainable addition and felt that tearing down something that was functional and in use was environmentally negative. In the end, the only way to make it work in that position resulted in almost no net-gain in terms of space and so was not suitable to Applicant-8.

This became a long protracted process of making new drawings and then Applicant-8 says the conservation officer kept finding problems with each new proposal. Eventually, the architect recommended putting in an application and taking it to appeal. In the meantime, Applicant-8 had spent a large amount of time and money on all of the design proposals and meetings and was very frustrated.

The application went in with the support of the case officer, the support of the neighbours, and the support of the local Parish Council, but was still refused. The decision was appealed but Applicant-8 lost confidence in the process when the appeal officer showed up at the house with the conservation officer and according to Applicant-8 they seemed very friendly. Applicant-8 also noted with frustration that the same policy wording that they were using to justify the proposal was the same policy wording that the conservation officer used to justify the refusal which resulted in them feeling that the policy was not good enough. The decision was upheld at appeal and so Applicant-8 has given up trying to build the extension and improve the energy efficiency of the property.

Applicant-8 feels that their experience is typical. Particularly as this was a prolonged process (approximately 2-years), and they have spoken to many other people about it in this time and have heard many similar stories. This experience has also made Applicant-8 change their feelings towards conservation whereas in the past they would have been in favour of the concept, they now feel very negatively towards how it is enacted and what it means.

H.9 Applicant-9

Applicant-9 is an environmental architect. They shared a storey about their Victorian terrace house in London which is not listed nor in a conservation area. Overall, they felt the experience they wanted to share was negative.

The first experience Applicant-9 wanted to share was from 2009 when they wanted to do a loft extension and external insulation to the front and rear of the house. Although this fell under PD, Applicant-9 went to have a pre-meeting with the planners to ensure they fully understood PD and weren't misinterpreting anything. Although Applicant-9 intended the meeting to discuss the loft extension, it was the insulation that ended up being the subject of discussion. First, Applicant-9 says that the planning officer did not believe that insulating the house would make a substantial difference and questioned why it would be done. Applicant-9 explained that the model of the house they had done showed it would save at least 50 energy cost. The officer then suggested that insulation the Council would not allow the external insulation because it would ruin the symmetry and character of the terrace. Applicant-9 was shocked as the building was not listed and not in a conservation area. They also brought pictures of their terrace which showed a lack of consistency to the buildings with some being rendered and some note, and different configurations of windows and roof projections. Applicant-9 was upset by this experience because they believe it was only because they were a built environment professional that they knew that what they wanted to do did not need permission. Otherwise, Applicant-9 said the experience with the planner would have given a clear message that insulating the building was not allowed, even though it was.

In 2013/14 Applicant-9 decided to go ahead with rear insulation through the Green Deal. Again, although the building was not listed nor in a conservation area, Applicant-9 had trouble with installers coming to quote for the work who insisted that they had been told by planners that planning permission was needed for 'old' solid wall buildings. Applicant-9 got in touch with their local planners to specifically ask what was PD but was unable to get an answer, even after chasing them. Applicant-9 ended up applying for permission which took time and money that they felt they shouldn't have needed to spend.

Applicant-9 noted that their interaction with building control showed officers with a good deal of understanding about energy efficiency and building physics. Applicant-9 suggested that more should be done to have planners and building control officers work together to understand and assess applications.

Applicant-9 feels their experience is typical is they have been very involved with talking to a number of other architects and building owners about the Green Deal. They expressed

that many people were pressured into applying for planning permission when it was probably not needed and in some cases the required interaction with planning resulting in extended timescales and costs has been a deterrent to getting work done.

H.10 Applicant-10

Applicant-10 is an architect. They shared a storey about a Grade II listed terrace house in London where the client wanted to do a significant energy efficient retrofit. Overall, they felt the experience they wanted to share was neither positive nor negative.

Applicant-10 noted that the project has been extremely protracted due to planning. They felt this was because the client was determined to do a deep energy efficient retrofit and was determined to get the project approved which meant being cautious and careful in dealing with planning. The first application for the project was submitted in 2011 and permission was finally achieved in 2013. In this time and prior to the first submission there were numerous meetings with planners, councillors, English Heritage, and other interest groups. Applicant-10 felt that if the client had forced the authority's hand at any point, then the scheme would have been rejected, so there has been a positive outcome, but it has taken a very long time which has also cost a large amount of money.

Although permission was granted, it came with a number of conditions, primarily to do with the low energy measures which were only given a two-year approval on the condition that they could be reversed. Key issues with planning with respect to energy efficiency and conservation included how to upgrade the windows, the appearance of the internal wall insulation, the appearance of the garden facing façade which was to include solar shading, and the appearance of the roof with respect to solar thermal and PV.

Applicant-10 said that overall they were frustrated that although there were numerous consultations with various stakeholders, none of those stakeholders had an appropriate skill set to evaluate the technical value of the proposals. Applicant-10 felt this meant that opinions were primarily based on feelings and 'pop culture', not on facts. Their frustration grew out of an inability to discuss the building performance and building physics in a meaningful way that could have resulted in true debate and understanding.

When asked, Applicant-10 remarked that they didn't remember a building control officer coming to any of the consultations who may have had more understanding of building physics.

Applicant-10 felt their experience was both typical and untypical. Typical because they felt that with any conservation structure there tends to be a protracted planning process. In addition, as Applicant-10 has worked on numerous conservation projects around England and they feel it is also typical that planning officers and councillors often do not

understand the technical side of buildings. Applicant-10 noted that they felt it was the job of planning to protect heritage and that the process should be challenging to ensure the right work is done. However, there should be greater diversity of skill within the planning authorities to do that job holistically, and the process of balancing the various opinions and aspects of a building with respect to assessment needs to be better addressed. Currently Applicant-10 feels conservation has too much weight primarily due to lack of other skills and knowledge within the process. Applicant-10 noted that the experience was untypical because of the nature of the client and their dedication to pursuing the project. The amount of time, and therefore money, put into the design development, consultations, and negotiations was not typical.

Appendix I : RESULTS OF ASSESSOR SURVEY

Q2: What is your local Authority? (31 responses)

Survey respondents came from 27 unique authorities.

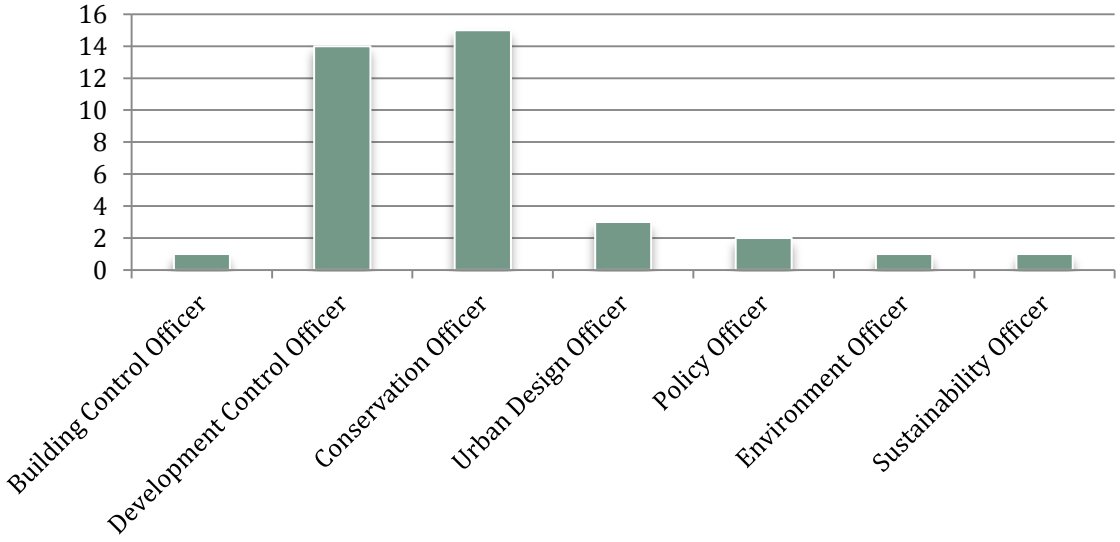
Q3: Approximately how many planning Officers are in your Local Authority? (30 responses)

Range: 3-60, Mean = 22.46, Median = 19, Mode = 20, Standard Deviation = 15.31

Q4: How many Officers make up the 'Conservation Team' ? (30 responses)

Range: 0-18, Mean = 2.90, Median = 2, Mode = 2, Standard Deviation = 3.18

Q5: What best describes your role? (32 responses)



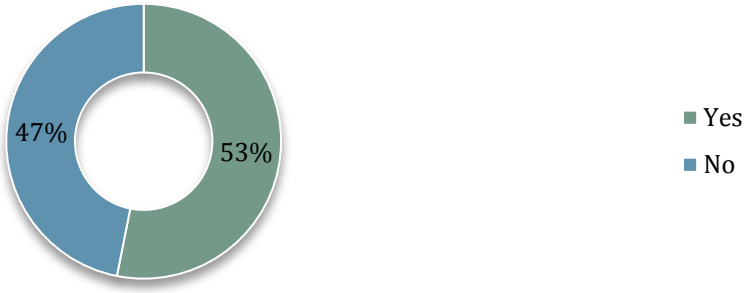
Q6: Approximately how many years have you been at your current position ? (30 responses)

Range: 0.5-40, Mean = 8.93, Median = 6, Mode = 3, Standard Deviation = 9.02

Q7: Approximately how many years have you been involved in the building industry ? (31 responses)

Range: 1.5-40, Mean = 14.24, Median = 9, Mode = 8, Standard Deviation = 11.42

Q8: Are carbon emissions/energy efficiency a priority in your local authority? (32 responses)



Q9: If yes, would you briefly explain why or provide an example? (18 responses)

The LA has been attempting to reduce the carbon emissions from their own property, by investing in microgeneration installations (namely solar panels), and improve the energy efficiency by retrofitting their office buildings, social housing etc. I think carbon emissions/energy efficiency is a priority of the corporate plan and it is also an objective of the Core Strategy.
We currently have a Green Party administration and as an authority we are signed up to the One Planet approach, which is a strategic approach to enabling the city to live within environmental limits.
Only at a small scale - work is being carried out to retrofit many Council-owned properties to make them more energy efficient.
In many ways this is a difficult question to answer. There is a corporate priority to reduce/save energy in council buildings and there are specific strategies in place by various teams in various departments, however it is not a priority for Planning Services as there is no policy from either DCLG or from our policy team to suggest it should be a strong material consideration in the determination of planning applications.
Sustainability has been high on the agenda in our LA for many years and, arguably, this has increased since the council has had a Green administration.
The Council has a Sustainable Building Supplementary Planning Document which sets high standards for energy efficiency for development proposals and a Microgeneration Planning Advice Note and is signed up to the One Planet Living programme. It also uses a Green Building Checklist and a Biodiversity Checklist in evaluating planning applications. It is the first LA to be led by a Green Party administration.
We have policies in place requiring a certain percentage of renewable energy on development schemes.
Our LA is keen to reduce the carbon footprint of buildings in our local area, starting with its own offices which have recently won a national award.
Corporate interest across the authority, designated corporate officers, and an issue taken into account, so far as is possible, in dealing with planning applications. Not sure how far endeavours are effective and how far they are following popular green agenda.
We do receive consultations on energy efficiency as a section, but this is not the bulk of our work, and energy efficiency is not a priority for most of our clients. We have recently consulted on the Green Deal with our housing Team.
I think that it is a priority in certain parts of the Council - e.g. Housing, but that there is a tension with other parts that lead to it being considered as much less of a priority politically, with conservation being much more of a priority than carbon reduction.
Policies coming through in emerging local plan.
One Planet Living principles were absorbed by the Council ,four years ago.
Featured in CSS.

Our Authority has a programme in place to improve the performance of our own buildings, many of which are listed. Unfortunately I am of the opinion that the Borough Council does not pursue building efficiency effectively, I do not believe that this is an officer issue.
The corporate vision for the Council includes a vision for a city in the forefront of low carbon living and minimising its impact on the environment from waste and pollution.
Driving to save money, cut bill and save energy.
It is a topic which is considered a priority by members although more for new build.

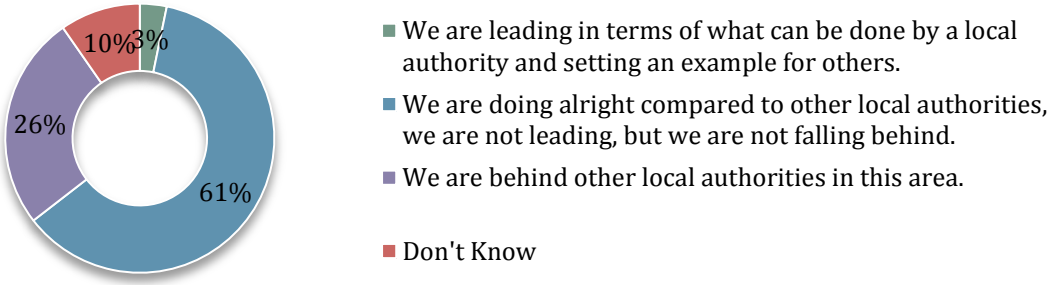
Q10: What is your local authority's biggest priority for reducing emissions in existing buildings? (29 responses)

In Council owned buildings it is improving energy efficiency to reduce fuel costs. In other buildings it is reducing carbon emissions having regard to aesthetic considerations
I am not aware that we have a specific priority. It is all about taking a holistic approach.
Unsure
Improving their own stock
Biggest priority is to get insulation into properties either by loft or wall.
Very unsure. In council buildings it's the standard - switch lights off etc. I suspect we may have been involved in providing loft insulation etc., but I'm not sure. Not my area.
Not aware of a specified priority but we receive many proposals for renewable energy installations, replacement windows and insulation works.
Switching to Green Energy Suppliers, Replacing existing low efficiency boilers and installing improved roof insulation, insulation and draught exclusion.
Not sure.
None specific. Seems to be a push for solar panels and similar
unsure
Given that many of our householders are on low incomes, the priority would be to reduce utility bills.
The priority is conservation and heritage protection. Improving energy efficiency is also an objective, but is currently subordinate to the main political aim of conservation which is very strong in this authority.
Climate change mitigation is, like any issue, used and abused in equal measure to suit political priorities. If politicians wish to approve something, and climate change mitigation would help them to do this, they will claim it as a high priority, over-riding all other factors. Similarly, if it is a problem to them wanting to refuse something (e.g. a wind turbine) then they will either ignore it or label it as 'tree-hugging'.
unsure
This Council does not have a priority regarding retrofitting of old buildings.
The policies are being put in place but currently the authority does not have the expertise to deal with this issue and it will be some time before we are able to fully take this on board
By enhancing the insulation.
Only through Building Regulations. Not through planning.
Not really sure what this question is asking
Not sure
None
Telling staff to be careful with use of appliances, etc.
We focus on our own buildings but do not seek to substantially improve the general building stock.....I do not think that we can.
We look to all areas where emissions could be reduced, both new and existing buildings.
Efficient lighting, turning off unused equipment (screens etc.), reducing mileage, printing

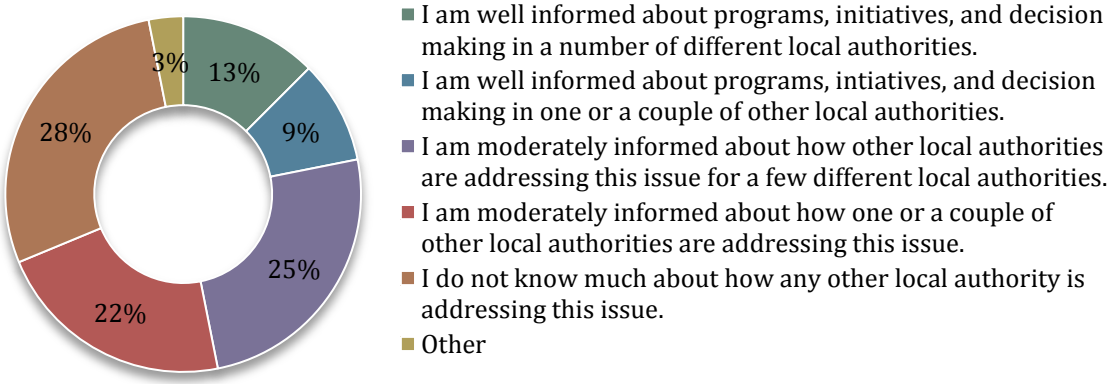
only when necessary.
Unsure
Very limited as a priority in considering development.
Insulation.

Q11: How do you think your local authority is doing when it comes to energy efficient retrofit of conservatin properties? (31 respondents)

Q12: How do you think your authority comapres to other local authirites around the country with regard to energy efficiency measures? (31 responses)



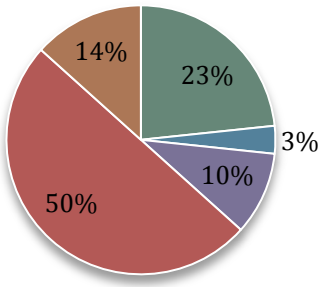
Q13: How much do you know about this issue in terms of what is going on in other local authorities? (30 responses)



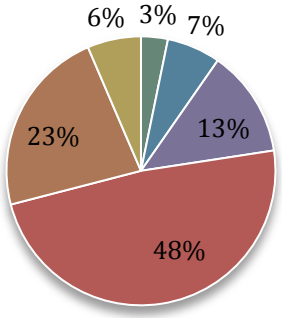
Q14: For the following window improvements to listed buildings, please select your view for each option. (31 responses)

New wood replacement windows with slimline glazing and matching proportions

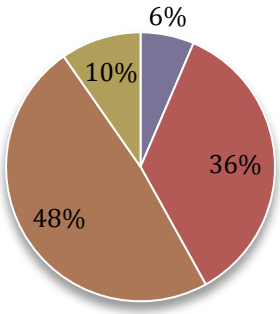
Encapsulated window for metal and Crittall windows



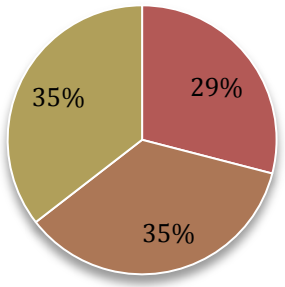
Slimline glazing glass replacement to original wood window



Secondary double glazing

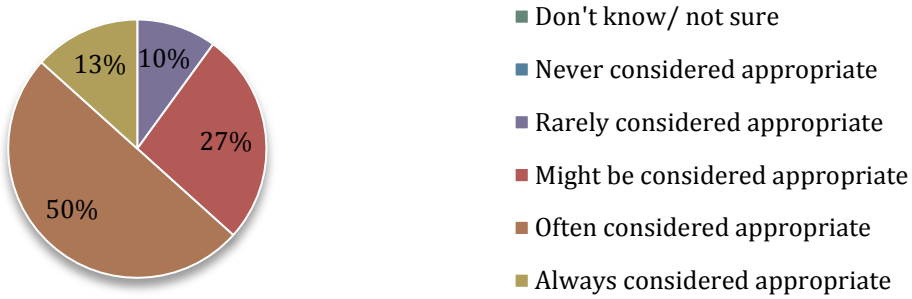


Draught proofing and improved air tightness to original window

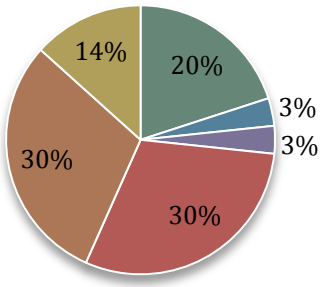


Q15: For the following window improvements to buildings in conservation areas, please select your view for each option. (31 responses)

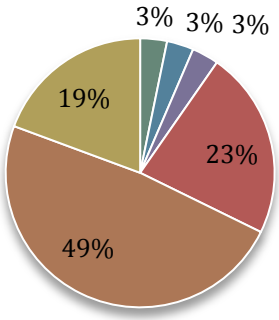
New wood replacement windows with slimline glazing and matching proportions



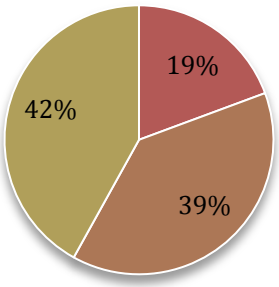
Encapsulated window for metal and Crittall windows



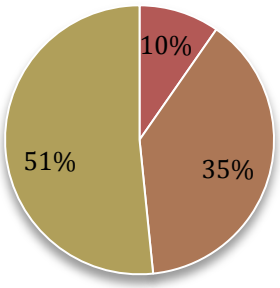
Slimline glazing glass replacement to original wood window



Secondary double glazing



Draught proofing and improved air tightness to original window



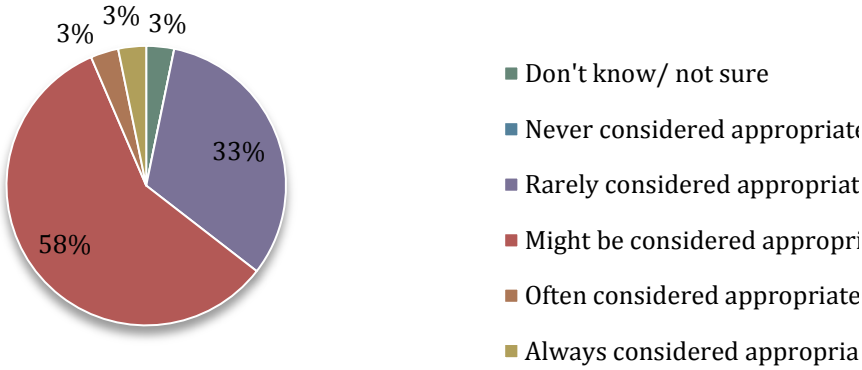
Q16: Does your opinion about window options change depending on if the window is located on the public or private frontage? (31 responses)

Q17: If yes, please explain. (14 responses)

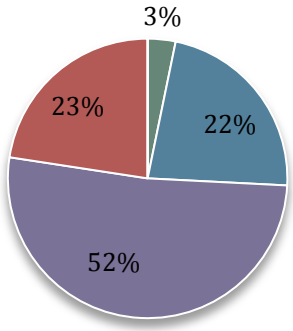
Yes regarding unlisted buildings in conservation areas, as the windows on street/public frontages are likely to make more of a significant contribution to the character and appearance of the CA. With listed buildings, my opinion does not differ regarding the window location.
For conservation area properties we would always accept double glazing on rear elevations that are not publicly visible but on street elevations this will depend upon whether the existing historic windows can be closely replicated.
Windows in the street scene are more visible so more important to get the right solution.
This does not apply to Listed Buildings, only unlisted buildings in Conservation Areas. Many single family dwelling houses in Conservation Areas enjoy Permitted Development Rights and most Article 4 Directions these days only control front elevations. The Council's policies do permit UPVC windows on unlisted buildings the rear elevations not visible from the street provided their style and method of opening remains the same.
In conservation areas we would be more concerned with visual impact from public viewpoints. For listed buildings, we would have concerns about all windows where they contribute to the historic character of the building.
In conservation areas yes as we cannot prescribe options where the character and appearance will not be affected. In listed buildings no, all elevations are treated the same.
In the case of Conservation Areas. With listed buildings it is unlikely that the position would alter the decision. Of more importance with listed buildings is the age and appropriateness of the current windows. We have a number which had inappropriate window replacements in the 1960s and 1970s. These are the cases in which we consider new double glazed units as possibly appropriate.
Unless for buildings that are attractive but non-heritage.
We do take into account the public face of conservation projects, and usually ask for handmade cyclinder glass on the outside of slimlite units on public-facing elevations only. However, we maintain a requirement to retain original windows on all elevations, on both listed and unlisted buildings, where they are capable of repair. All our replacement windows replicate the details of the originals as closely as they possibly can.
If for a building in a conservation area yes, as there is no planning control there. If to a listed building, not really no as every part is important and 'listed'.
More visible on the street and therefore has more impact on the character of the area.
The purists wouldn't like it, but I feel "out of sight - out of mind".
Because it will have more impact on visual amenity, from a public perspective.
If, in Conservation Area the impact of a rear facing window would be reduced. For Listed Buildings it would depend on the special character of the affected part of the building.

Q18: For the following wall improvements to listed buildings, please select your view for each option. (31 responses)

Internal wall insulation



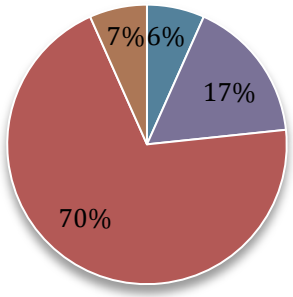
External wall insulation



Q19: For the following wall improvements to buildings in conservation areas, please select your view for each option. (31 responses)

Internal wall insulation

External wall insulation



Q20: Does your opinion about wall options change depending on if the wall is located on the public or private frontage? (31 responses)

Q21: If yes, please explain. (20 responses)

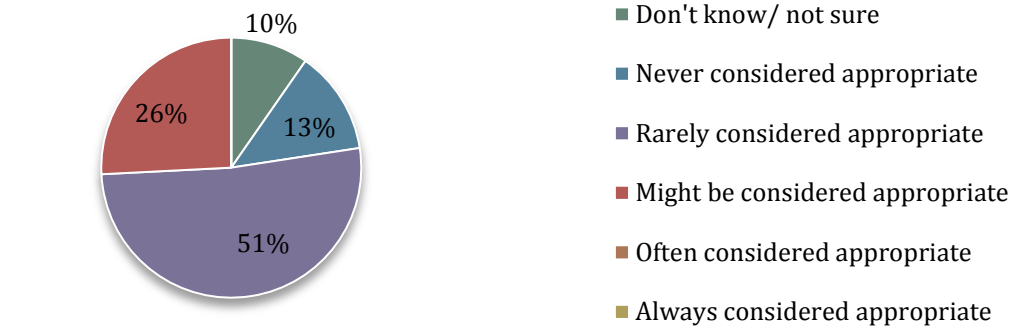
Yes, regarding unlisted buildings in conservation areas as walls on street/public frontages are likely to make more of a significant contribution to the character and appearance of the CA. Listed buildings, no.
External wall insulation in conservation areas will often be acceptable on rear garden elevations where they are rendered, but will be problematic on brick or flint faced rear elevation. On street elevations it will only very rarely be acceptable in exceptional cases.
As above.
In conservation areas the rear could perhaps be externally insulated with little harm to the significance.

All planning application decisions are a balance. If the building is not listed but is considered a heritage asset it may be appropriate that some of its character is altered/lost to accommodate solid wall provided that the harm does not extend to the wider conservation area. If the building is of good architectural merit and original details would be obscured/lost this might not be acceptable. However, planning applications should pass or fail on their own merits not on the justification of 'well no one would really see it'.
Alterations to rear elevations not visible from the street of unlisted single family dwelling houses generally enjoy permitted development rights and are often not protected by Article 4 Directions. Therefore the council would not have any planning control over those elevations Also they are less likely to have stucco mouldings or decorative stonework and brickwork that should not be removed or covered over, so where there is control, it could be acceptable. There may be rear elevations that are of historic and architectural interest that would be harmed by external insulation and where there is planning control such proposals would be resisted. Internal wall insulation could also harm the historic and architectural character of an unlisted building but is not presently controlled.
We have granted permission for external insulation at the rear in conservation areas but often have concerns about the front. I can recall a detached Victorian building where we allowed external insulation and the developer reinstated traditional detailing (cornices etc) over the insulation. Whilst this slightly altered the relationship between the walls and roof, on a detached building this was felt to be acceptable. We have many Victorian and older terraced properties with external detailing. We have real concerns about the visual impact of external insulation to a mid-terraced property, where the consistency in appearance of the terrace frequently contributes to the character and appearance of the conservation area.
As Q17.
Insulation on the internal or external walls of an historic building can cause huge problems for the breathability of the building and ultimately damage the building's fabric. We have had some success with lambs-wool and similar natural products used on external walls beneath weatherboarding and similar external surfaces.
Unless for buildings that are attractive but non-heritage.
We do not approve external wall insulation for brick built properties, citing alternative methods of improved for those. However, we have approved external wall insulation for stucco and roughcast / pebbledash properties since these coverings need to be renewed in our harsh North-West climate on a regular basis. We only use mass systems based on hemp-lime plaster for old buildings on the inside and outside, with Glaster for roughcast. We only allow internal wall insulation where the original lime plaster has been previously lost. All systems are breathable and we do not advocate board and batten or other non-mass systems. We try and replicate the original finishes as closely as possible. Where Roman Cement stucco survives, we try and conserve this as it is very tenacious and durable.
Would only be considered appropriate on the rear in conservation areas and only where NOT part only of a unified terrace. Internal wall insulation on unlisted buildings would not require planning permission.
If for a building in a conservation area yes, as there is no planning control there. If to a listed building, not really, no as every part is important and 'listed'.
If not readily visible within a Conservation Area, I believe the use of external insulation may be acceptable.
More visible on the street and therefore has more impact on the character of the area.
Cladding in a CA requires an application so if it can be seen from the public highway then this could have more of an impact on the appearance of the area.
see above
Same as above, but for listed buildings, this will always be a bad idea. First, you trap

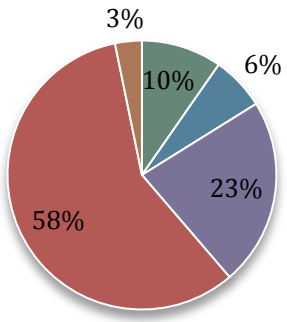
moisture on permeable surfaces, damaging fabric, and it takes more energy to construct a building than to operate it so, if you damage fabric that is counter-productive to your objectives. Always compare embedded energy with operational energy. Secondly, the entire architectural appearance is altered.
It would depend on the impact on the setting of the Conservation Area, and in some cases the impact may be less if on a private frontage of a building. For Listed Buildings however, the issue is about the impact on the importance of the building itself. When considering insulation of heritage buildings, great consideration must be given to how the building fabric performs to ensure that breathability of buildings is maintained.
As above with windows

Q22: For the following roof improvements to listed buildings, please select your view for each option. (31 responses)

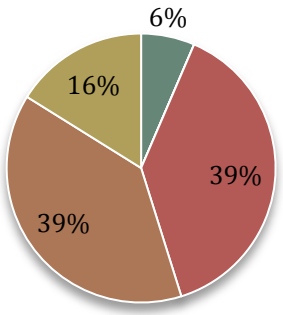
Insulating above the joists, replacing the roofing material.



Insulating above the joists, reusing original roofing material



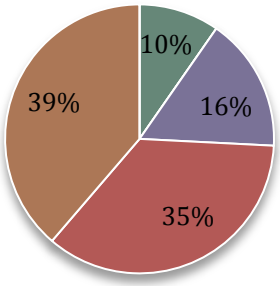
Insulating between the joists under the existing roof.



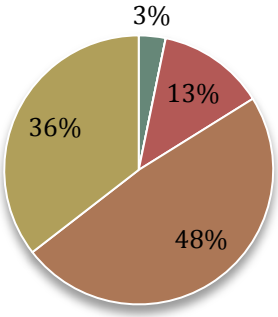
Q23: For the following roof improvements to buildings in conservation areas, please select your view for each option. (31 responses)

Insulating above the joists, replacing the roofing material.

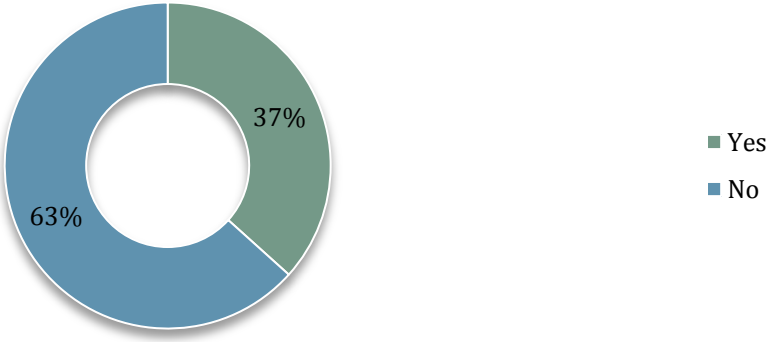
Insulating above the joists, reusing original roofing material



Insulating between the joists under the existing roof.



Q24: Does your opinion about roof options change depending on if the roof is located on the public or private frontage? (30 responses)



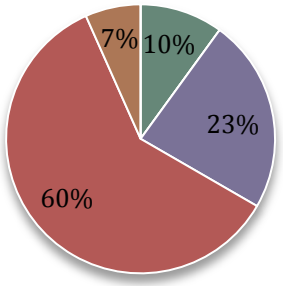
Q25: If yes, please explain. (11 responses)

As above.
All planning application decisions are a balance. If the building is not listed but is considered a heritage asset it may be appropriate that some of its character is altered/lost to accommodate such a change provided that the harm does not extend to the wider conservation area. If the building is of good architectural merit and original details would be obscured/lost this might not be acceptable. However, planning applications should pass or fail on their own merits not on the justification of 'well no one would really see it'.
For the reasons set out in answers above.
As above.
As with wall insulation above, the decision regarding appropriateness relies principally on the choice of material. Breathable materials may be considered appropriate in the majority of cases, non-breathable materials are not considered appropriate in historic buildings. Raising or altering roof shape and height is a difficult decision, and always needs careful consideration.
Would depend on the circumstances.
Although generally roof insulation which doesn't affect external appearance (or for listed buildings, does not modify the roof structure) is likely to be acceptable.
If for a building in a conservation area yes, as there is no planning control there. If to a listed building, not really no as every part is important and 'listed'.
as per 21
Again, public visibility.
It would depend on the impact on the setting of the Conservation Area, and in some cases the impact may be less if on a private frontage of a building. For Listed Buildings however, the issue is about the impact on the importance of the building itself. When considering insulation of heritage buildings, great consideration must be given to how the building fabric performs to ensure that breathability of buildings is maintained.

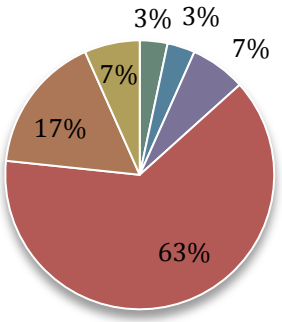
Q26: For the following ground improvements to listed buildings, please select your view for each option. (30 responses)

Digging out basement levels, removing any original flooring.

Digging out basement, preserving and replacing any original flooring.



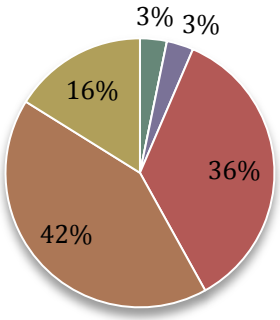
Insulating under existing floorboards for buildings with no basement.



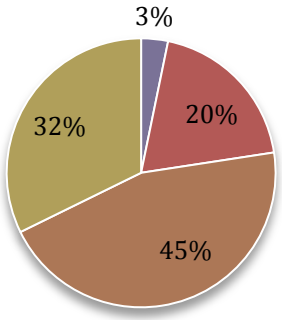
Q27: For the following ground improvements to buildings in conservation areas, please select your view for each option. (30 responses)

Digging out basement levels, removing any original flooring.

Digging out basement, preserving and replacing any original flooring.



Insulating under existing floorboards for buildings with no basement.



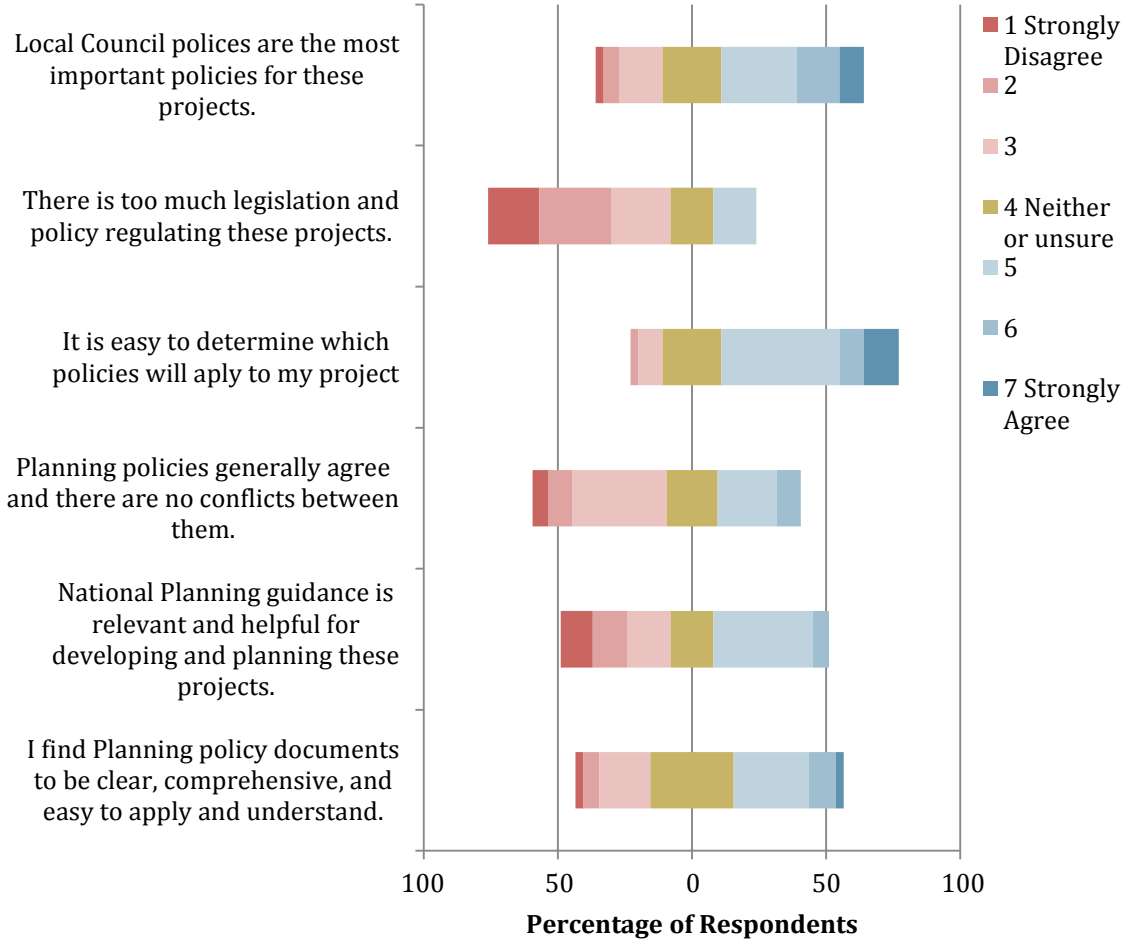
Q28: What are your biggest concerns for applications to improve energy efficiency of properties subject to conservation opinion? (32 responses)

A lack of understanding from the owners about how historic buildings 'perform' in terms of energy efficiency and thus the potential to cause damage to historic fabric; namely not understanding the thermal performance and that historic buildings 'breathe'. Loss of original timber windows is another primary concern.
In general terms, that the existing energy performance of traditional buildings is misunderstood and underestimated and that the long term benefits of the proposed works on the fabric and character of the building have not often been properly thought through. The process is overly driven by the promise of short term financial incentives and the arbitrary imposition of generic energy saving targets.
None
Character of the listed building and/or character and appearance of the conservation area in accordance with the 1990 Act
Concerns generally about the potential impact on listed buildings. Loss of historic windows, potential for damp problems caused by not allowing the building to breathe etc.
Loss of original, irreplaceable detail and the introduction of bland, uninteresting facades which will require ongoing replacement/repair. Damage to the walls and roofs of historic structures which have stood for hundreds of years and the issue of the long term breath-ability of the building and the impact upon its internal fabric. Solid wall insulation is in its infancy and the finishes are not particularly pleasant or of a high quality. Many historic buildings have external finishes that are aesthetically pleasing and which greatly contribute to the character and feel of an area. The wholesale loss of traditional streetscapes would greatly reduce the quality of an area and the quality of life of those

living within it. To justify this on the basis of what are often small scale energy efficiency improvements would be harmful. And contrary to policy.
For unlisted buildings in Conservation Areas the planning system has no control over internal works. Whilst interiors may be of historic and architectural interest and worthy of preservation, there is currently no legislative framework for doing so.
Impact upon historic detailing and character, particularly where that character is publicly visible.
Balancing preservation of special interest/character or appearance against ensuring buildings are energy efficient and comfortable to live in.
1
Generally energy improvements in Conservation Areas fall under Permitted Development Rights, so it is unlikely that we would get involved in decisions relating to these issues. This can mean that significant alterations may be undertaken which affect the character of the area but which the authority can do nothing about.
Irreversible compromise of original fabric. Inelegant additions to buildings
There is a preoccupation with people wanting new windows and doors, rather than seeking to gain an appreciation of buildings as total systems, where improvements in one area have an impact on another. We usually refer people to the SPAB publication Old House Handbook and Jeff Howell's publications and if they have any further questions they should get back to us. We try and persuade people to veer away from board and batten insulation systems and to concentrate instead on drying out solid walls so that they can insulate properly, as originally intended.
That they consider an appropriate ventilation and moisture control strategy and undertake measures with care not to damage existing fabric.
That it should be looked at holistically, as much can be done without harming the building, either aesthetically or physically. Many common-market treatments such as double-glazing, external insulation, cavity wall insulation, loft spray-on insulation and visually obtrusive wind turbines and solar panels can be adequately circumvented for less obtrusive measures such as sheep's wool or hemp insulation, draught-proofing, curtains and heat recovery systems.
None
none
Loss of the historic fabric of the building, works that may be detrimental to appearance of street scene.
impact on the appearance of the building
As long as the original appearance can be kept, we are open to ideas.
Retention of original features / character
loss of historic fabric
External appearance
breathability
From Building Controls point of view the overall efficiency of the building will always be our target. We will work closely with the Conservation officer to achieve this aim.
A Council has a legal requirement to consider the character and appearance of the Conservation Area. This is the over-riding requirement. There is rarely any reason why energy conservation should conflict with this given the vast range of options.
None
Making sure that what is being implemented is appropriate for the building in question, with a need for a thorough understanding of the building fabric and how it performs. There needs to be a balance between responding to climate change and protecting the historic environment.
Maintaining the integrity of the building
Damage to building / character and original features
The principal aim must be conserve the special character of the building / area and if a certain energy efficient method cannot be achieved without compromising this character

the development should not go ahead.
Look to alternatives which do not require major intervention in the fabric first. Do not ask whether you can remove original windows and double glaze when you have a boiler that is thirty years old and lots of draughts that could be rectified. Insulate in ways which do not damage the fabric of the building - always with appropriate, breathable materials.

Q29: Please indicate your level of agreement with the following statements about Planning Policies, specifically thinking about the above projects. (32 responses)

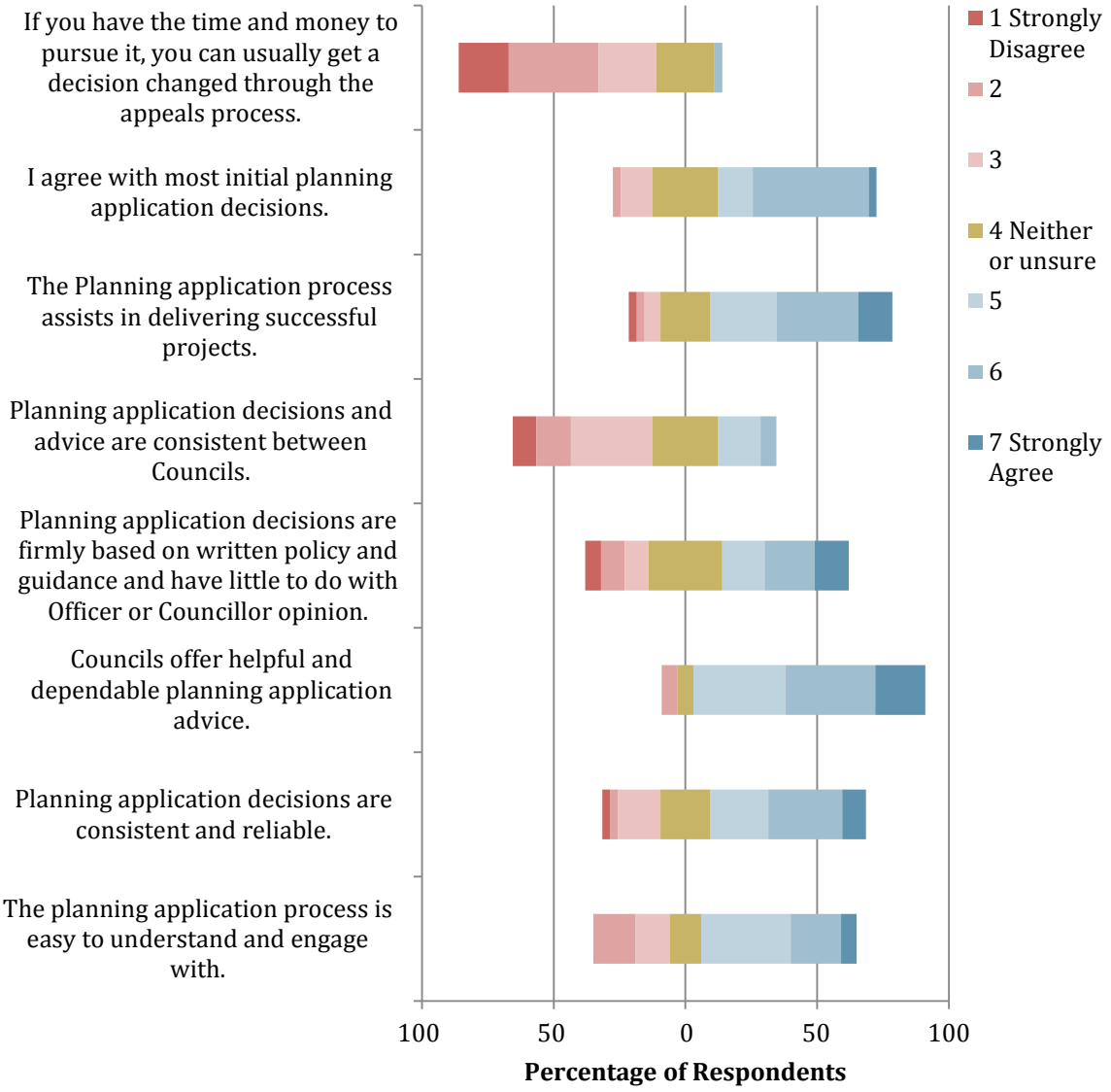


Q30: Any additional comments regarding Planning Policy? (91 responses)

I've found difficulties in knowing how much weight to give to certain national policies where their aims and objectives conflict with one another i.e. energy efficiency & design policies.
Decisions should be made in accordance with the 1990 Act and NPPF not Local Plan policies.
A requisite level of protection for heritage assets is essential. At present it is unlikely that any planning department has robust and relevant policies which deal with solid wall. The NPPF and the superseded PPS5 changed the language of conservation policy, however these changes are so recent that it is unlikely local policies LDF's/UDP's will have caught up with this change. The NPPF allows sustainability to be considered with greater material weight however it is possible to interpret the documents such that this is outweighed by the need to protect heritage assets in every case.
Stronger and clearer policy guidance from English Heritage and Central Government would be useful. EH technical advice on these matters is very good.

We find the English Heritage publication energy Efficiency and Traditional Homes to be a good and concise publication and refer people to that in the first instance. We welcome the renewed emphasis in the NPPF on people using their professional judgement to arrive at an approach to a particular building or site, rather than seeking to provide solutions centrally to every issue. Successful conservation requires a creative approach. There should be more emphasis on efficient use and maintenance, rather than new products and technologies.
It is not about conflicting policies, but about balancing them, and placing the right level of value on each so that overall one can see where the balance lies. This requires specialist skills and personal interest in getting the right solution, which itself DOES conflict with the pressure to make speedy and economically productive decisions.
I preferred the detail previously contained in PPG15 it was far clearer.
Specific local policy is absent.
The NPPF has lost so much of the detail that was previously important that clear local policies have become more important than ever.

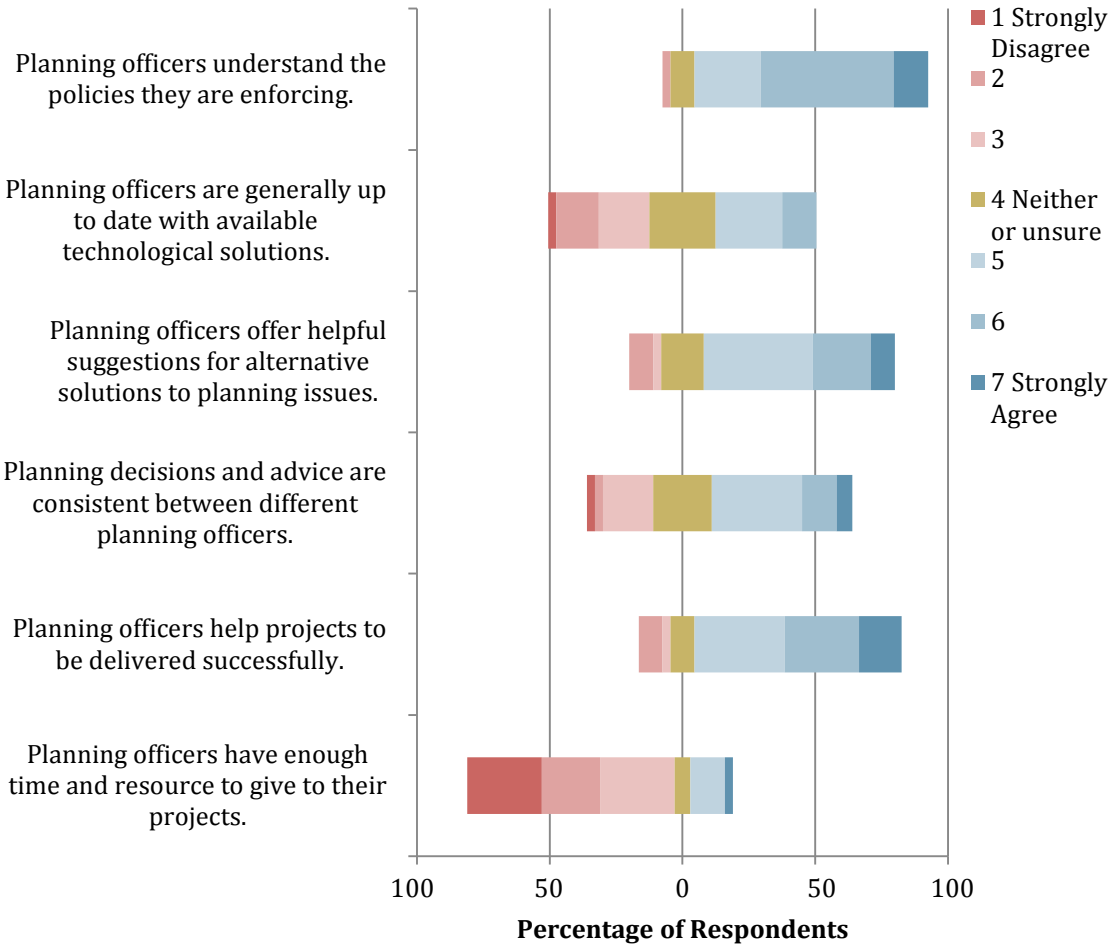
Q31: Please indicate your level of agreement with the following statemens about the Planning Application Process, specifically thinking about the above projects. (32 responses)



Q32: Any additional comments regarding the Planning Application Process? (5 responses)

It's important. It is the only mechanism for balancing and airing the competing material impacts of development proposals. It also allows the public to be involved.
Planning Committees can from time to time overturn officers' recommendations and this does lead to inconsistent decision making and weaken the link between written policies and decisions. The big reduction in detailed central government guidance and greater reliance on LPAs own local plans and supplementary planning documents is very likely to result in greater variations between LPAs. This in turn could have an impact on appeal decisions as developers will cite planning decisions in other LPAs in support of their schemes and Appeals Inspectors try to deal with greater variations between LPAs. There is an inherent contraction between the localism agenda and a centralised planning appeals process and also between localism and trying to achieve national goals.
We try and emphasise the importance of pre-application discussions in delivery a more considered and beneficial result. We also encourage people to live in a property for several months before considering new works.
The appeals process is now often circumvented by the 'local appeal' process of getting applications called-in to Committee, so that decisions are made not by skilled officers, but by untrained and easily persuaded Members. It is then that unsound decisions are made, and where massive inconsistencies are seen.
The principle reason we have bad development is because of taxation and inflation reducing the money available to build good buildings. Note, most buildings built prior to World War I are considered visually appealing, yet those after are not. Yet we only had a planning system 1948. Prior to the world wars Britain's marginal tax rate was about 10% and, we were on a gold standard, so did not suffer inflation. Incidentally, it is inflation which caused the housing bubble and it, for the first time in history caused housing to be favoured over and above productive uses such as farming and industry. Inflation also causes over-sized buildings in some places combined with not enough cash elsewhere to maintain buildings. "What You Should Know About Inflation" Henry Hazlitt (1964) http://www.mises.org/story/2914

Q33: Please indicate your level of agreement with the following statements about Planning Officers, specifically thinking about the above projects. (32 responses)



Q34: Any additional comments regarding the Planning Application Process? (5 responses)

Due to recent cuts CPD events are now limited. Therefore the option to keep so up to date with tech solutions is not always available.
Planning departments have seen significant cuts in recent years and have been disproportionately affected in the local government cuts. This has left existing staff with increased workloads and less time to devote to projects. Planners are frequently targeted by the government as the reason why policies have failed or the means of ensuring policy success. This is an overly simplistic view which is not reflective of reality. It is not, for instance, the fault of planners that the economy is failing to grow as expected. Planners approving planning applications is not the issue. For example the lack of housing supply is due to house-builders not building out their current permissions, not because local authorities are failing to approving housing schemes.
There are likely to be more variations between planning officers in different LPAs than between planning officers in the same LPA. Much will depend also on the CPD schemes in place (or not) and the technical and policy advice they can call upon within their department or council.
There is little training for planning officers on retrofit projects. The biggest help would be that all planning officers consulting on historic buildings would have to be full members

of the IHBC - they would then be sufficiently experienced and knowledgeable to provide informed solutions on buildings. All historic buildings are unique, therefore solutions can vary markedly even between symmetrical pairs of buildings. Professional advice should be valued above other forms of information or marketing. There needs to be an emphasis also on understanding buildings and how their materials and components work together.
This varies between officers. General planning officers who have minimal time, interest and understanding of the more specialised issues that relate to balancing energy efficiency and heritage conservation. Conservation officers meanwhile, generally have a great personal passion for what they are dealing with, and as such are better informed and less willing to put decision-speed over decision quality.
It helps when there are other officers within Councils that planning officers can go to for further advice - that is part of my role at the City Council.

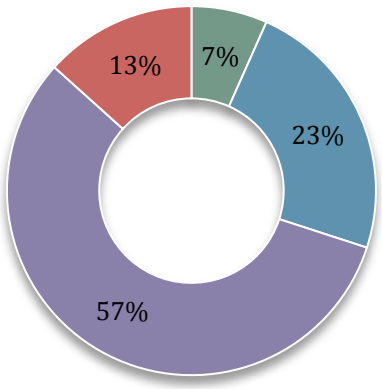
Q35: What are the most significant policies or legislation that inform your decision making (list up to 5)? (30 respondents, 66 responses)

Policy or Legislation	Count
Local Policies	30
NPPF	24
Planning Act 1990	6
PPS5 Practice Guide	2
Building Regulations	1
Green Belt	1
London Plan	1
PPG15	1

Q36: What are the most significant guidance documents that inform your decision making (list up to 5)? (28 respondents, 44 responses)

Guidance	Count
English Heritage Guidance	16
Council Guidance	11
NPPF	9
PPS5 Practice Guide	2
Building Regulations	1
Historic Environment Local Management (HELM)	1
IHBC members	1
PPG15	1
SPAB resources	1
STBA	1

Q37: How do you feel about the replacement of the PPSs with the NPPF, specifically with regard to your decision-making on these types of projects? (30 responses)



- The NPPF has a negative impact on decision making, since it gives so little guidance. However, I do not expect decisions to take longer as a result. Officers will just be more reliant on more detailed local policies.
- NPPF is a much better written, more usable and more concise document than PPS 5, which was a national embarrassment for its clumsy phrasing, long-windedness and internal confusion.
- The NPPF has had mixed effects. It does positively distill too much policy into one much easier document, but it needs support and is currently notably lacking that following its replacement of the PPSs, and PPGs.
- These documents are not part of my decision process.

Q38: Which of the following organisations have you personally used for information, advice, professional networking, or knowledge sharing in this area? (27 responses)

Organisation	Count	% Respondents
English Heritage	26	96.3%
BRE	14	51.9%
SPAB	12	44.4%
IHBC	11	40.7%
Georgian Group	7	25.9%
Victorian Society	7	25.9%
Other (see below)	4	14.8%

Historic Scotland, Institute for Sustainability, NLA, Oxley Conservation, Private Consultants, STBA, TSB

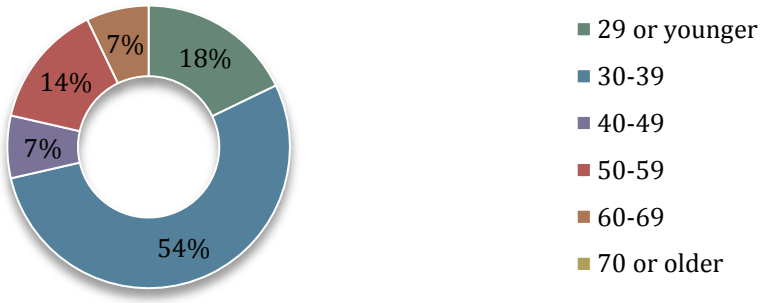
Q39: Do you have a suggestion for any new policy or guidance document that would help to improve the energy efficiency of existing buildings while maintaining cultural heritage? (13 responses)

Local level guidance on improving the energy efficiency of existing buildings would be extremely beneficial - this could help tailor the national level guidance to locally specific circumstances.
There needs to be a national document specifically on energy efficiency and historic buildings - one that takes account of current research that shows that historic buildings are inherently more energy efficient than is shown by the standard application of u-values. This document needs to take a balanced and holistic view whereby the maintaining historic fabric and character is given the due consideration it deserves and

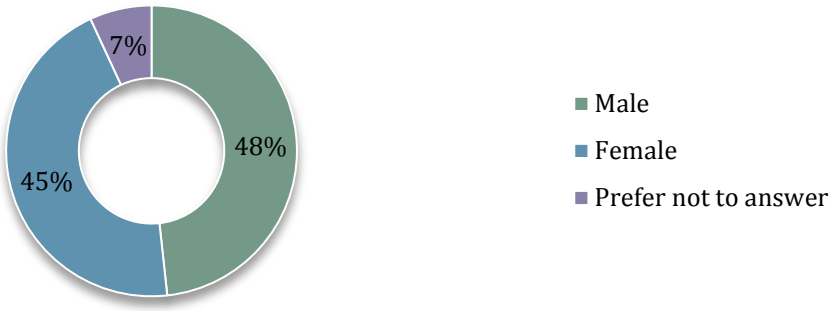
allows flexibility in the approach to improving energy efficiency. The document should be produced by the HEF or EH but endorsed by Govt.
This is becoming a more important issue and therefore a national document might be helpful to give more cohesive decision making across the country. English heritage have some very informative documents which could be a good basis but with policies to inform officers.
There should be some quantitative analysis of the potential scope for CO2 reductions in order to get a sense of proportion and priorities. For example, if Listed Buildings represent only 1% of the total building stock, if one achieved zero CO2 emissions from the remaining 99% of the stock one could achieve an overall CO2 reduction of 99% over the whole stock without touching a single listed building. Supposing, using window, wall, roof and floor insulation, one could achieve a 30% reduction in CO2 emissions from Listed Buildings. If LBs only represent 1% of the total stock this would only contribute a reduction of 0.3% CO2 emissions from the total building stock. (Even if the percentage of total buildings that were listed were 10 times higher - at 10%, the reduction in CO2 from LBs would only be 3%. Likewise in respect of the % of the building stock in Conservation Areas - if this is 10% a reduction of 30% would only contribute a 3% reduction to the total stock of buildings) Supposing 33% of the CO2 savings arise from wall insulation. This element would therefore only contribute a 0.1% CO2 reduction from the total building stock. It simply is not worth harming the character of listed buildings to achieve this negligible reduction of CO2 - which would be swamped by the massive CO2 increases resulting from new Chinese coal fired power stations. In view of this, there should not be too pressure put on historic buildings to try and achieve very high CO2 emissions. The gains do not justify the harm.
Not policy or guidance as such, but if historic terraces are going to be encouraged to insulate externally this needs to be undertaken in a comprehensive manner. There needs to be a grant system and clear procedure for ensuring that whole terraces are insulated at the same time with existing historic detailing replicated after the insulation is installed. The government has to take the initiative with this - it cannot be done locally.
EH's 2011 has a tendency to be rather self-referential in terms of government policy, and lost some of the brevity and freshness of the previous 2008 publication on Traditional Homes. It's better that there is a diversity of organisations offering a variety of advice, particularly as the technology changes all the time. The important thing is to let the building and its use drive the project, rather than relying on prescriptive government advice. Guidance should be just that - an informing guide, rather than dogma. The Climate Change and your Home would be a good central repository for information. We need some paper copies from English Heritage of their advice - not everybody has an ipad.
The issue of embodied energy has been raised time and again with national policy makers, but never acknowledge. The retention of existing fabric can significantly reduce the need to expend energy creating new materials. National policy needs to acknowledge this, and start tackling the throw away culture which encourages people to remove relatively sound timber windows and replace them with PVC windows which have been made in china, shipped to the UK, travelled by lorry and so on and which are created by using oil and other precious resources, and which dump tonnes of very dangerous materials into the natural environment in the production process in order to "save the planet". In addition, the relative ecological efficiency of natural materials (such as lamb's wool) compared to man-made materials has been completely ignored and should be voiced publically and vocally in order to make people realise that short term cost savings are not the only consideration.
Policy: make it clearer that no one issue has precedence over the other. Policy: make it a requirement that decisions are based on specialist professional advice. Guidance: provide guidelines on specialist staffing levels, placing a priority on internal provision where that specialist advice reaches a certain threshold of regularity. Guidance: Perhaps introduce a formal accreditation scheme which raises the standards and consistency of those specialist advice industries, and making it a requirement that such advice is provided and

normally followed when making planning decisions. Guidance: Provide guidance on officer / member relations, specifically making it harder for members to make decisions contrary to officer advice, perhaps through a third-party referral scheme whereby if they make a decision contrary to specialist advice, the decision must then get ratified by an external, specialist third party.
Bring back PPG 15 or a version of it with detailed policy and practice is so generalised as to be useless.
Clear data relating to thermal insulation systems (pay-back, life cost, efficiency) provided by an impartial third party so that designers and LA officers have a more measured method to determine the suitability of a proposed system.
I think that if taxes and inflation were reduced, the economy would develop new, clean, cheap and abundant sources of energy. In the meantime, Britain has 1000 plus years of coal supplies and clean burning coal power stations only produce CO2 and water vapour. From evidence I have seen, CO2 lags temperature changes, principally because of the oceans. When oceans are warmer, they emit CO2 and when they are cooler, they suck it in. In addition, CO2 is a trace gas measuring in parts per million whereas water vapour is 2% of the atmosphere. In addition, water vapour, per molecule is a more potent greenhouse gas. Humans have little impact on global water vapour, and it is principally affected by the sun, both in terms of heat causing evaporation and, electromagnetic rays affecting nucleation of clouds. Whilst energy efficiency will help the economy and benefit people in terms of independence and self-sufficiency, potentially reducing toxic pollution and reducing reliance on dangerous energy like nuclear, it will not affect climate change significantly. Just one volcano can produce as much CO2 as the entire human race in one year. I think we should however allow new energy and efficiency technology just as we are positive about any other new technology, it should be encouraged but, it should not side-line other objectives like heritage. Unfortunately, proposals to over-tax and regulate the economy to reduce CO2 will destroy the very market mechanisms which would bring forth new energy saving technology and, new clean, cheap and abundant sources of energy. My suspicion is that this is the reason why the big energy companies are now tending to support carbon taxes, etc.
I am looking at developing a new Local Plan policy on climate change and the historic environment, which aims to provide more guidance to owners of traditional buildings in the steps that they should implement when looking to implement energy efficiency measures. Some sort of national document pulling together case studies of best practice would also be helpful.
A policy that can be relied on for decisions, appeals and enforcement which actually clarifies the importance of appropriate breathable materials!

Q40: Which category below includes your age? (28 responses)



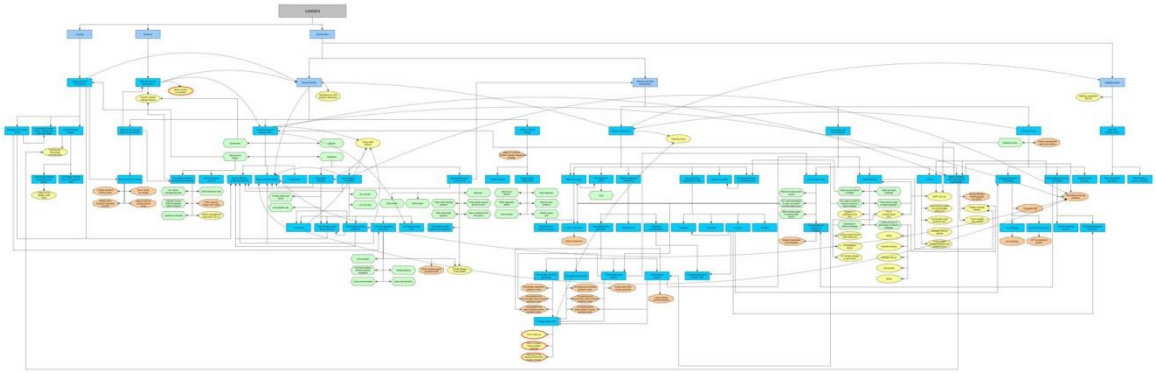
Q41: What is your gender? (29 responses)



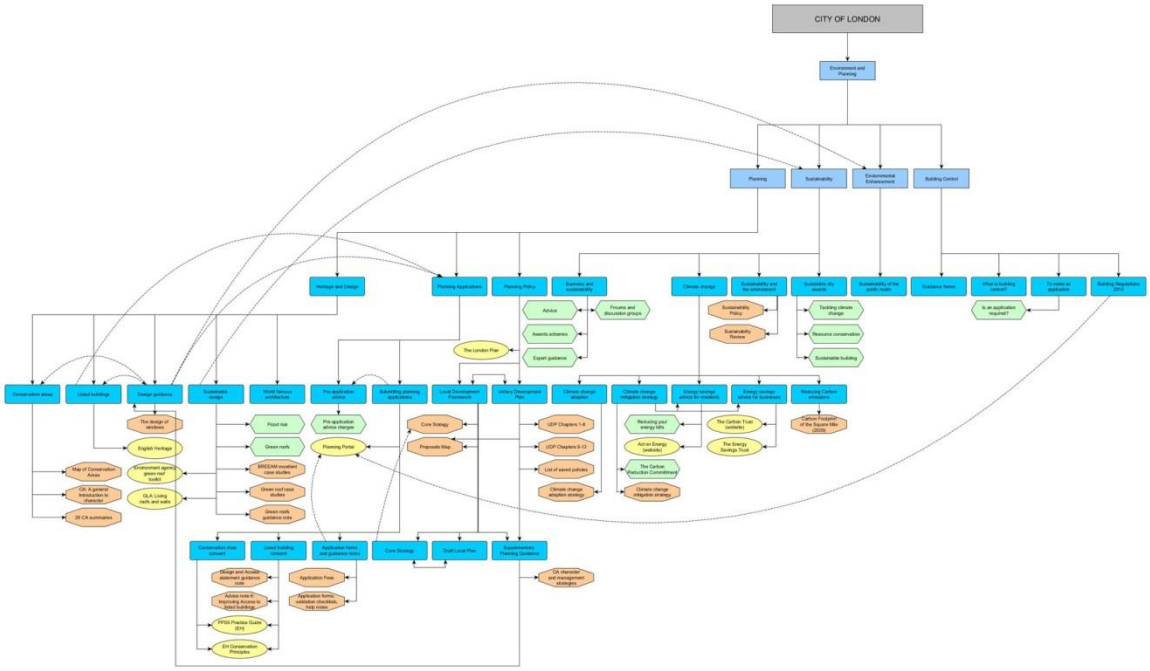
Appendix J : COUNCIL SITEMAP DIAGRAMS

The CD attached to this dissertation contains the following full-size digital image files:

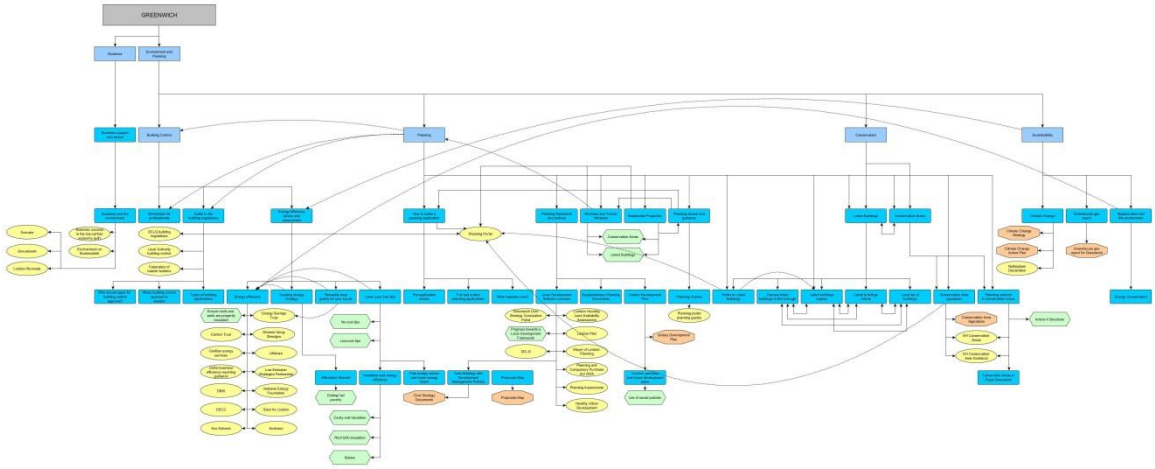
Camden



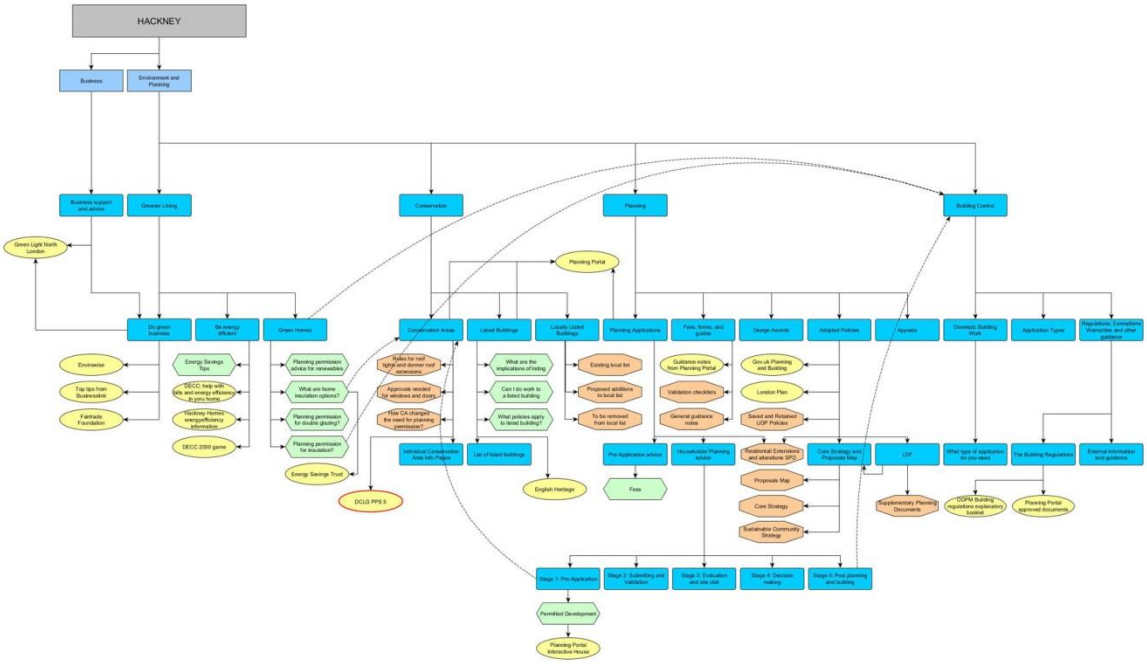
City of London



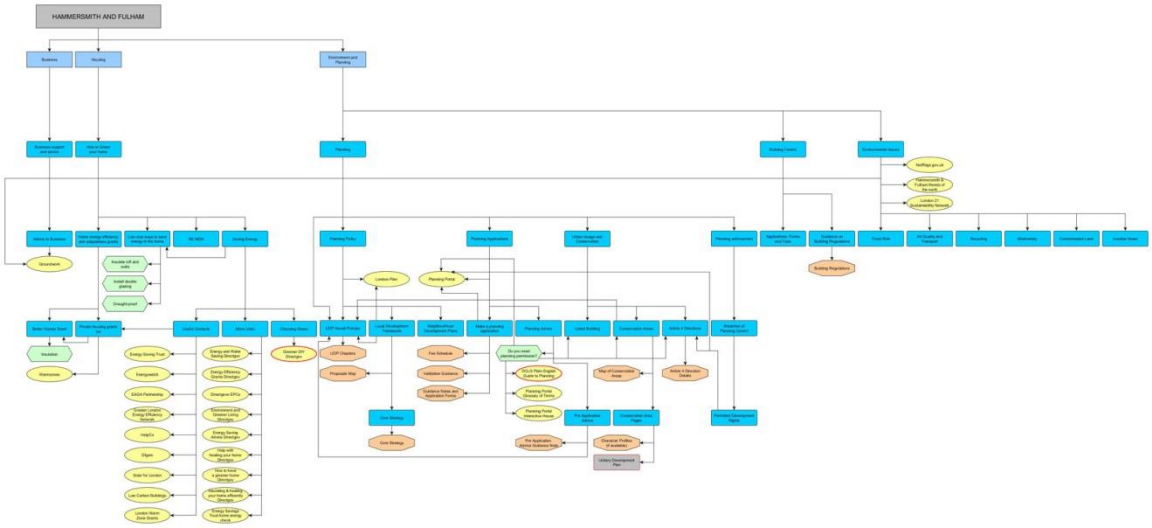
Greenwich



Hackney



Hammersmith and Fulham



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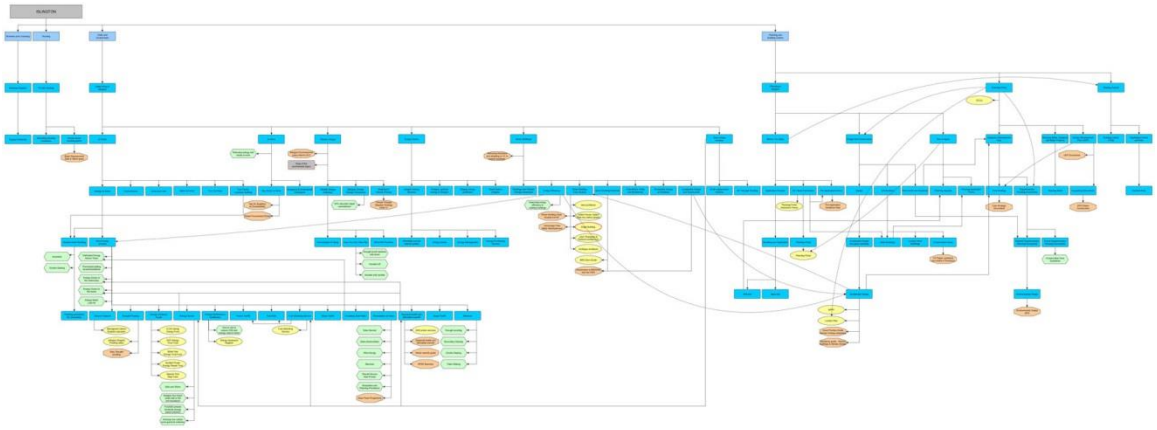
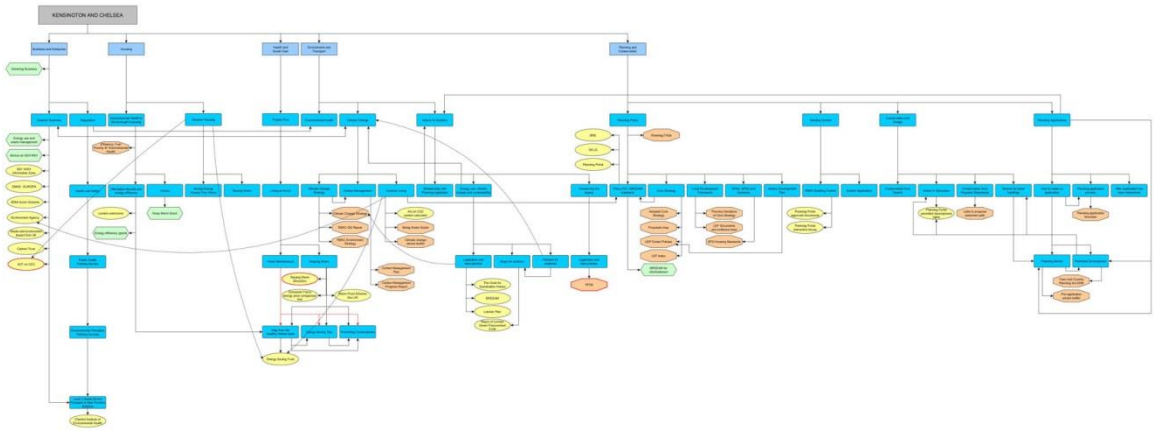


Kensington and Chelsea



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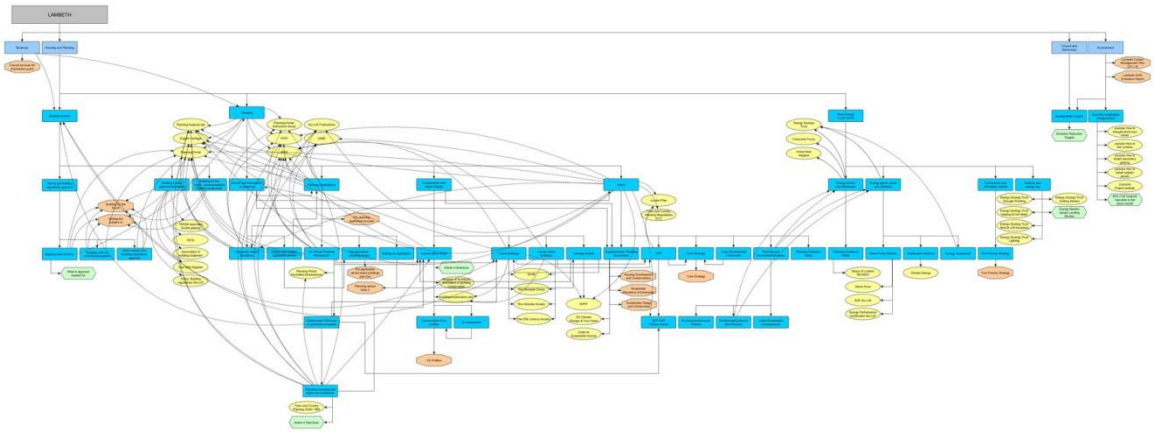

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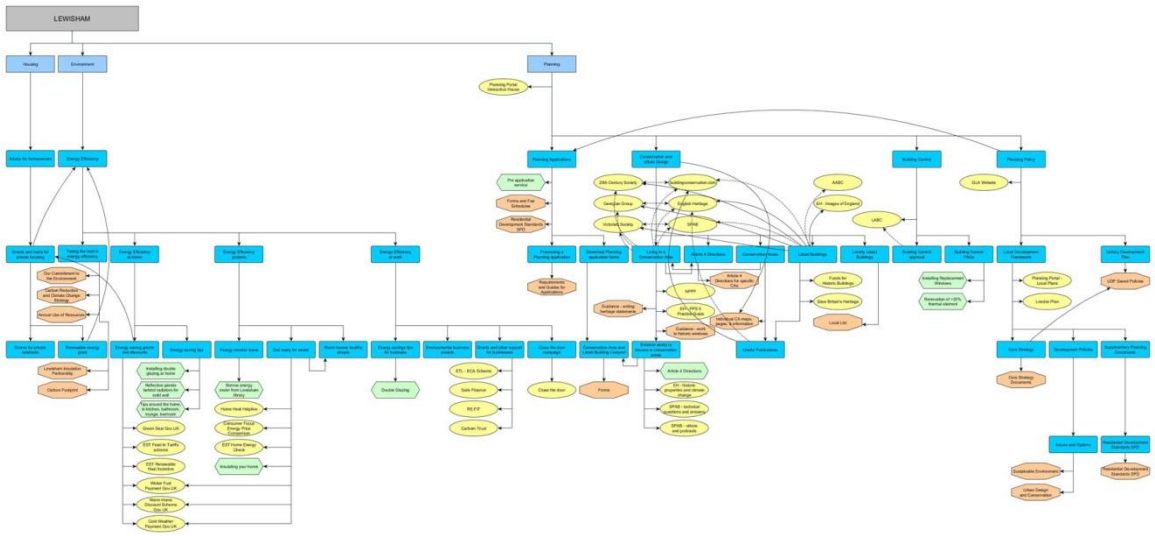
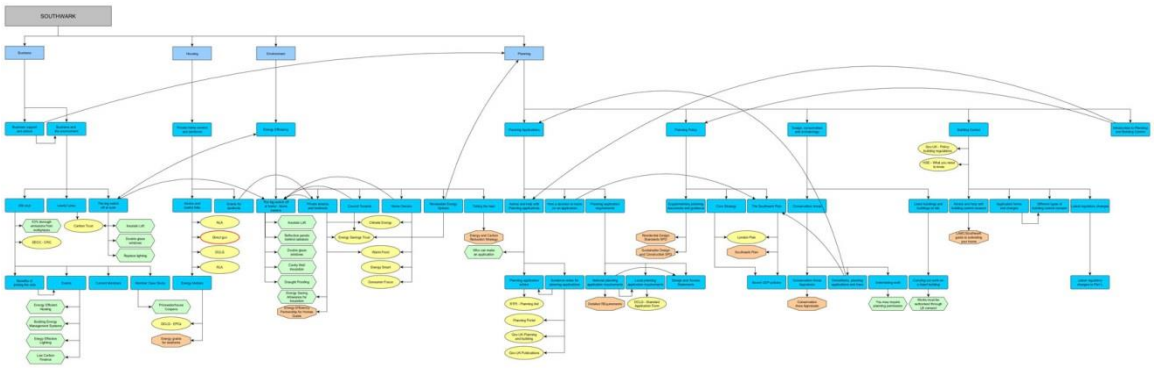
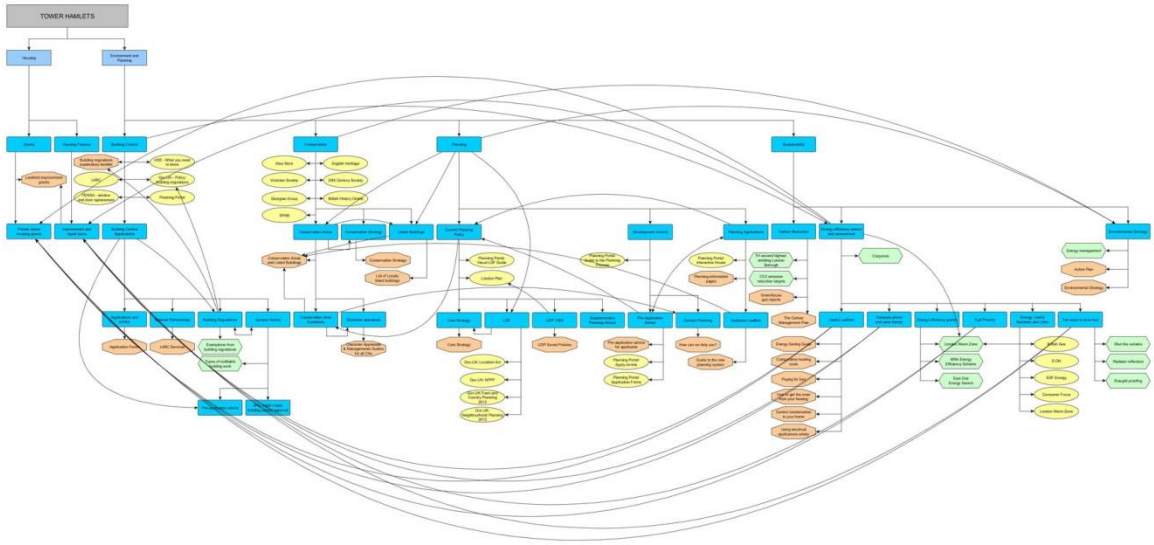


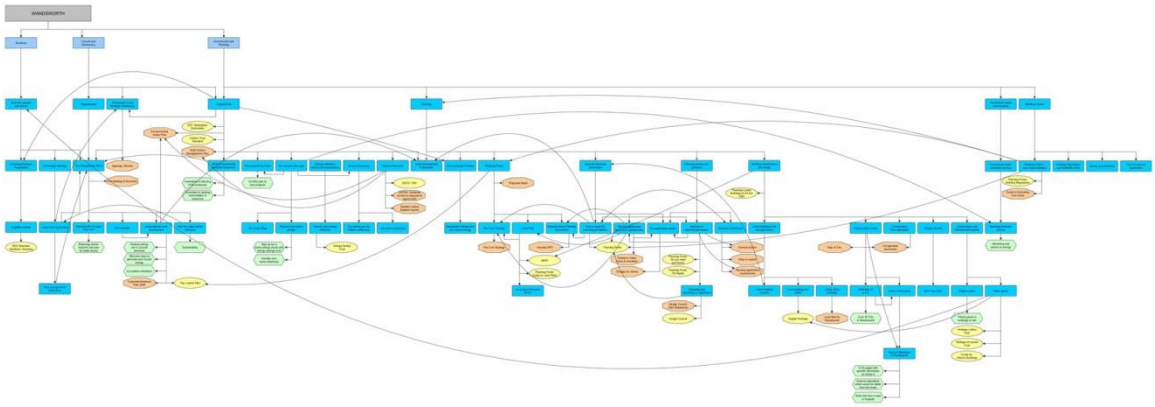
Southwark



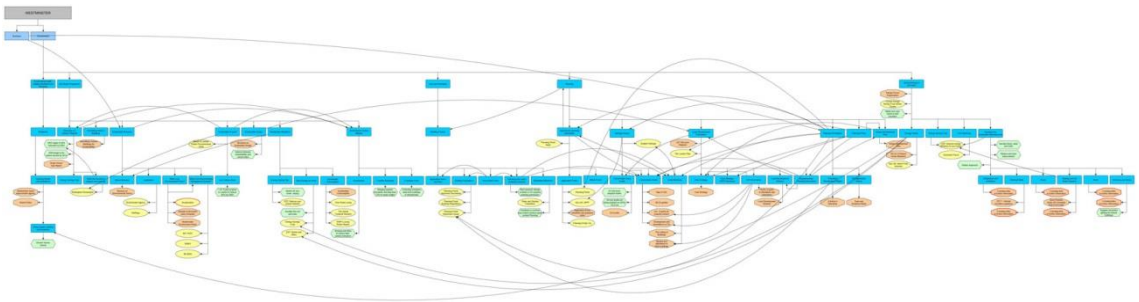
Tower Hamlets



Wandsworth



Westminster



Appendix K : RESULTS OF C-IQ ASSESSMENT

Question	Camden	City of London	Greenwich	Hackney	Hammersmith & Fulham	Islington	Kensington & Chelsea	Lambeth	Lewisham	Southwark	Tower Hamlets	Wandsworth	Westminster	% Rating	Mean	Range
Believability/Reputation Dimension Questions																
1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100	-	-
2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100	-	-
Concise Representation Dimension Questions																
3	8	7	5	3	5	11	6	11	8	5	5	5	8	-	6.7	3-11
4	24	6	4	8	5	12	7	7	4	9	4	8	8	-	8.2	4-24
5	6	6	11	6	5	5	6	7	9	7	6	15	4	-	7.2	4-15
6	1	1	1	1	1	1	1	1	1	1	1	1	1	-	1	1
7	1	1	2	2	1	2	1	4	1	3	4	2	1	-	1.9	1-4
8	1	1	1	1	1	1	1	1	1	1	1	1	1	-	1	1
9	28	9	16	4	12	52	22	13	14	21	16	16	29	-	19.4	4-52
10	3	1	2	2	3	1	4	3	2	3	2	3	1	-	2.3	1-4
Interpretability/Understandability Questions																
11	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100	-	-
12	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100	-	-
Relevancy Dimension Questions																
13	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100	-	-
14	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	92	-	-
15	Y	P[a]	N	P[b]	N	Y	N	N	Y	N	N	N	Y	38	-	-
	[a] Provides an advice note on window replacement including historic windows. Weighted rating: 0.5 [b] Provides an information sheet on works to window and doors in conservation areas. Weighted rating: 0.5															
16	Y	Y	P[c]	Y	N	Y	P[d]	Y	Y	N	Y	Y	Y	77	-	-
	[c] For CAs only. Weighted rating: 0.7 [d] Link only to Planning Portal regarding Article 4 permitted development. Weighted rating: 0.3															
17	8	1	1	1	0	1	1	10	6	0	7	1	1	-	2.9	0-10
	Sites and number of Councils linked: English Heritage (10), 20th Century Society(4), Georgian Group (4), SPAB (4), Victorian Society (4), Buildingconservation.com (2), NPPF (2), British History Online (1), Conservation Directory (1), HELM (1), Idea Store (1), Planning Portal (1), RAABC (1), RIBA (1)															
18	Y	N	N	Y	N	Y	N	Y	N	N	N	N	Y	38	-	-

Question	Camden	City of London	Greenwich	Hackney	Hammersmith & Fulham	Islington	Kensington & Chelsea	Lambeth	Lewisham	Southwark	Tower Hamlets	Wandsworth	Westminster	% Rating	Mean	Range
19	Y	P[e]	N	Y	N	Y	N	Y	N	N	N	N	Y	42	-	-
	[e] Only in the advice note for window replacement. Weighted rating: 0.5															
20	P[f]	N	P[g]	Y	Y	Y	Y	Y	P[h]	N	N	Y	Y	65	-	-
	[f] For adding extensions, external fences and satellite dishes only. Weighted rating: 0.3 [g] Doesn't explicitly call it permitted development but good links to what is allowed. Weighted rating: 0.7 [h] Only partially for external works in a conservation area. Weighted rating: 0.5															
21	N	N	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	77	-	-
22	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	85	-	-
23	Y	N	P[i]	P[i]	Y	P[j]	Y	Y	Y	P[i]	P[k]	Y	Y	75	-	-
	[i] Explained only on conservation area page, not in general. Weighted rating: 0.7 [j] In retrofit guide download. Weighted rating: 0.3 [k] In planning glossary. Weighted rating: 0.3															
24	9	0	6	2	45	22	85	8	19	1	0	8	8	-	16.4	0-85
25	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	100	-	-
26	Y	Y	N	N	N	N	N	Y	N	N	N	N	N	23	-	-
27	N	N	Y	N	N	N	N	N	N	N	Y	N	N	15	-	-
28	Y	N	Y	Y	N	Y	N	Y	N	N	N	N	Y	46	-	-
29	N	N	N	N	N	N	Y	P[l]	Y	Y	N	Y	N	35	-	-
	[l] No link to Council planning pages but link to Planning Portal. Weighted rating: 0.5															

Question	Camden	City of London	Greenwich	Hackney	Hammersmith & Fulham	Islington	Kensington & Chelsea	Lambeth	Lewisham	Southwark	Tower Hamlets	Wandsworth	Westminster	% Rating	Mean	Range
30	Y	N	N	P[m]	N	P[n]	P[o]	N	N	P[p]	N	P[q]	P[r]	22	-	-
	[m] Single link from insulation options to conservation area page. Weighted rating: 0.5 [n] Two links to planning 'Sustainable Design' page only. Weighted rating: 0.5 [o] Single link from Greener Living to Policy CE1 BREEAM standards. Weighted rating: 0.3 [p] One from business energy efficiency and one from renewable energy options. Weighted rating: 0.3 [q] Two null links to environmental policies. Weighted rating: 0 [r] One from 'Sustainable Design' to the Local Development Framework. Weighted rating: 0.3															
31	N	N	Y	Y	N	N	N	N	N	P[s]	N	N	N	19	-	-
	[s] Links go to Planning Department and building control is under that. Weighted rating: 0.5															
32	10	3	7	7	6	10	5	4	6	6	6	7	3	-	6.5	3-10
	Measure and number of Councils promoting: No-cost tips (11), Low-cost tips (10), Loft insulation (10), New heating system (10), Draught proofing (8), Fuel switch (7), Cavity wall insulation (6), Double-glazing (6), Insulate your home/ Insulation (4), Wall insulation (3), Floor insulation (2), Solid wall insulation (2), Door improvements (1), Replacement lighting (1), Secondary glazing (1), Thermal curtains (1), Window improvement (1)															